

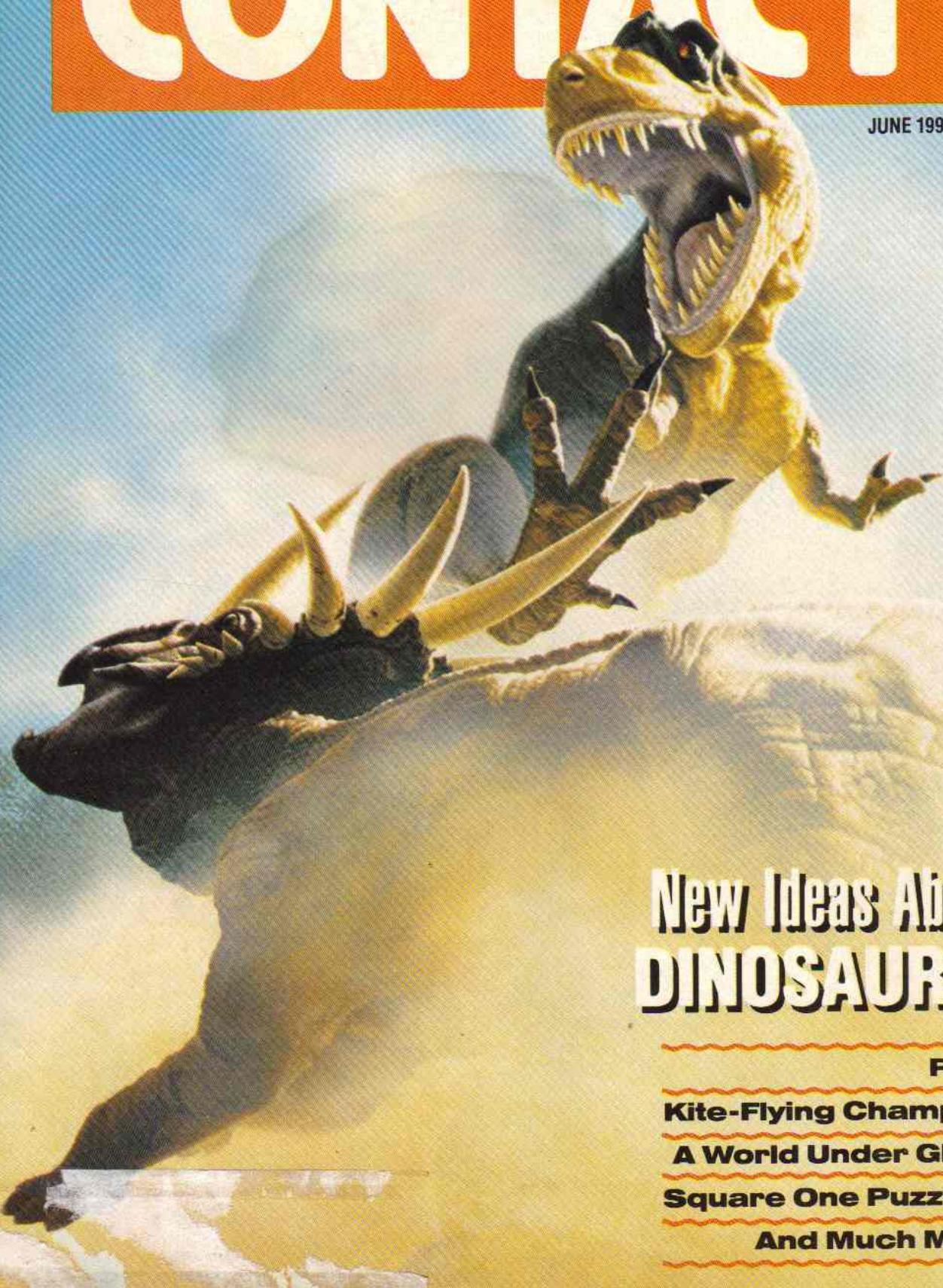
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CHILDREN'S TELEVISION WORKSHOP EXPLORES THE WORLD

Jennifer Boyde

# CONTACT®

JUNE 1990



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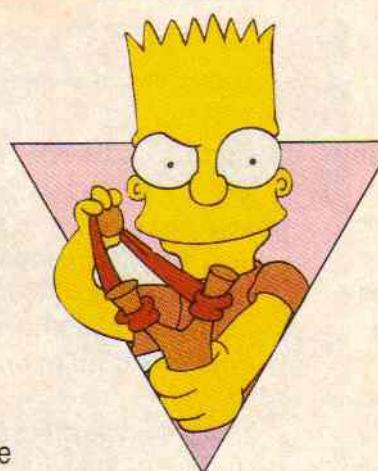
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## ON OUR COVER

A Daspletosaurus and a Stygimoloch do battle on the dusty plains of prehistory.

Cover Illustration © John Gurche



### Deep Freeze

Ten thousand years ago, there weren't any refrigerators. So how did people back then keep leftover food from spoiling? According to Professor Daniel Fisher of the University of Michigan, they sank it under water.

Scientists recently discovered parts of a mastodon—an ancestor of the elephant—buried in a Michigan cornfield. Thousands of years ago, that area was a lake. Also, mysterious groups of rocks and gravel were mixed about the remains. This gave Professor Fisher an idea.

He thinks that prehistoric hunters may have eaten the huge mastodons and tied weights around the leftovers. Then they kept the uneaten food floating beneath the sur-



### Bonk!

You're playing baseball, and someone hits a high pop fly to you. You're going back...back... BONK! It smacks you on the head. Thanks to a company in Tennessee, that bonk might not hurt as much as it used to. Worth, Inc. has invented the RIF baseball. That stands for "Reduced Injury Factor." When you hit it, it behaves just like a normal baseball. But, because of new lighter materials in the center of the ball, the company



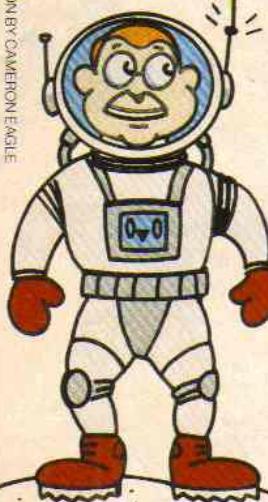
claims it can be a lot safer.

In a game, it's possible to get hit by a ball moving more than 60 miles per hour. Each year, thousands of ballplayers get seriously hurt that way. According to the company, more than half of those injuries could be prevented by playing with RIF balls instead of "regular" baseballs.

So far, many Little League teams across the U.S. have started to use RIF baseballs. But not everyone wants to play with them. One reason: They don't sound quite the same as ordinary baseballs. When someone hits the RIF ball, it makes a dull "thunk" sound instead of a sharp crack. No wonder it isn't always a "hit!"



ILLUSTRATION BY MARY POWELL



## Hello? Is Anybody Out There?

In the next 10 years, a group of scientists plan to do a lot of eavesdropping...in outer space! With the help of dish-shaped radio antennas, these Earthlings hope to hear from other planets.

The scientists plan to build a high-power radio receiver that will listen for faint signals from space aliens. The group wants to search about 770 sun-like stars that are up to 80 light years away. (That's 470 trillion miles from Earth.) Many scientists believe that

these stars might have planets with life forms on them.

The 10-year search will also scan the Milky Way and its 400 billion stars. Some scientists believe there could be life on 10,000 to 100,000 planets in the Milky Way alone! Others doubt there is life on any other planets.

The radio receiver is scheduled to be turned on in October 1992—the 500th anniversary of Columbus's discovery of America. So who knows what will be discovered? Maybe there is a whole new world out there.



## BUZZ!

When scientists first saw Robert Starr's airplane, they weren't sure if the wings were big enough to lift it off the ground. Well...it flies! The nine-foot-long "Bumble Bee" is now in the record books as the world's smallest piloted plane.



PHOTO © JOEL FREEMAN

## Read It and Weep

If someone tells you to read the fine print, you'd better hope it's not written by Colin Humphreys of the University of Liverpool, in England.

He and a team of scientists have found a way to write letters so small that 29,000 pages of words could be printed on the head of a pin.

This new process uses a machine called a scanning electron microscope. It writes by carving with a beam of

energy that is almost as narrow as a single atom. (An atom is so small it can't be seen by the naked eye.)

According to Humphreys, this may lead to amazing changes in computer science. With this new technology, computer chips could also be made to hold 1,000 times more information than they do today. A supercomputer that is now the size of an entire room could be built the size of a suitcase.

*Story suggested by Darrell Danelly of Apple Valley, CA.*



## So What's New?

You tell us and you'll get a nifty CONTACT T-shirt—if we print your story. Send us any science story from the news that you think our readers would like to know about. (Be sure to tell us your T-shirt size and where you heard the story.)

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**New York, NY 10023**

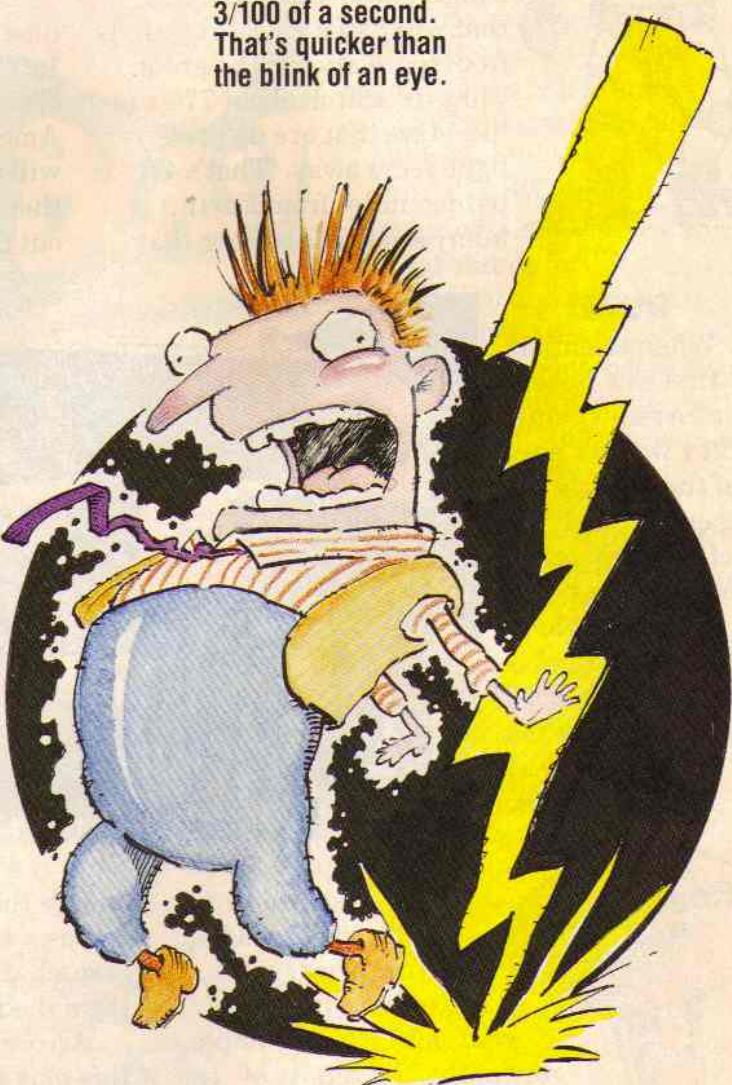
# FACT



**T**wo thirds of a shark's brain is used for its sense of smell.



**M**ore than half of all Americans eat spaghetti by winding it around their forks.

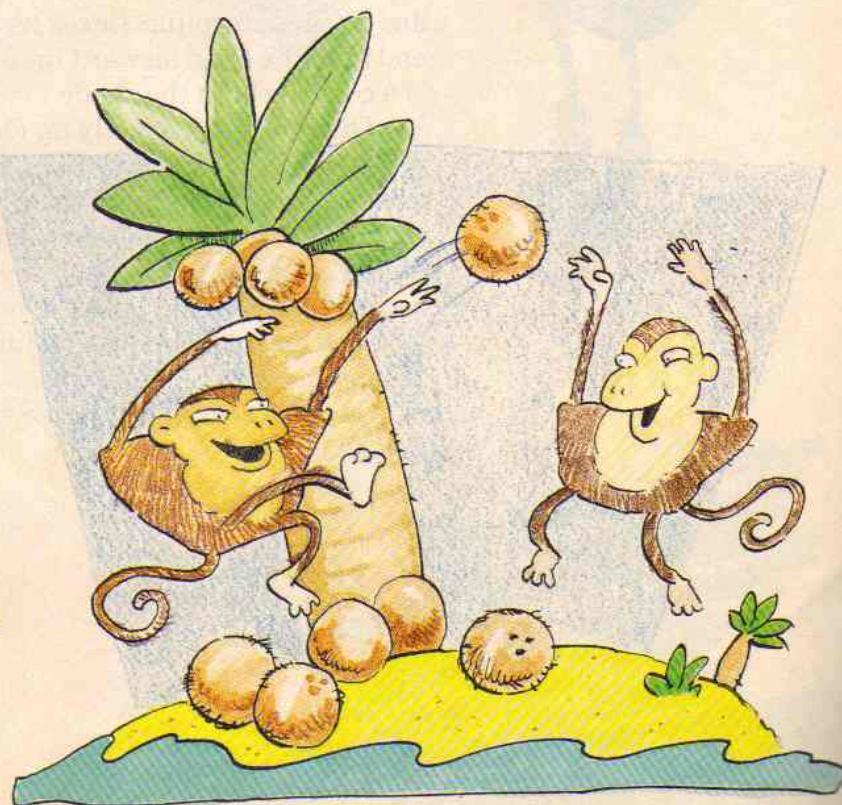


# ODDS

▼ A chameleon's tongue can be longer than its entire body.



► In its lifetime, a coconut tree will grow about 15,000 coconuts.



▲ There are more bacteria on one human body than there are people on the Earth.



# ANY QUESTIONS?

By Amy Roberts

## WHY

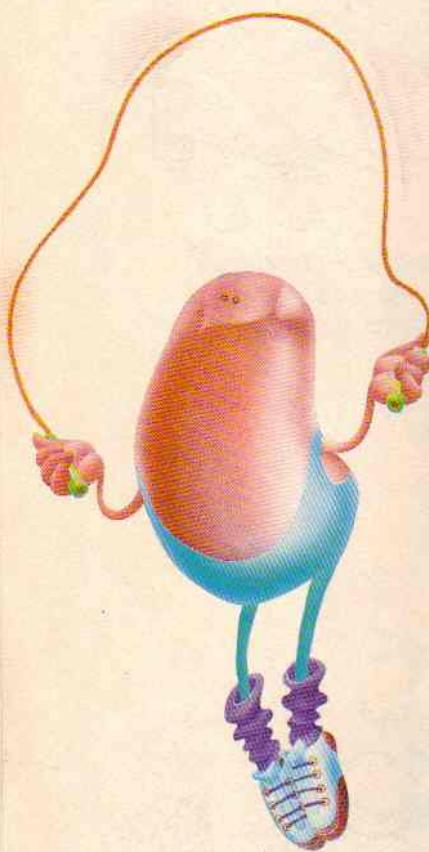
### DO JUMPING BEANS JUMP?

A jumping bean leaps around a lot even though it has no legs. And that's not the only strange thing about it. It isn't even a real bean! A jumping bean is the fruit of the poison arrow plant, which grows in Mexico.

What keeps the bean hopping is a caterpillar or grub that hatches under its skin. To the grub, the bean is like a coat that can make it feel too warm in sunlight. If the animal doesn't find a way to cool off, it will die. So the caterpillar flexes its body and flips the bean forward in search of a cooler spot in the shade.

This grub isn't exactly an ideal guest. When it eats, it uses the bean for food. When it leaves, it cuts a round hole in the bean's skin. After several months, the insect leaves to become a moth. And then the bean — which isn't a bean — isn't a jumper anymore, either!

*Question sent in by Erica Smith,  
Boston, MA.*



## HOW

### DO TREES AND PLANTS HELP US BREATHE?

Trees and green plants are important food producers. During the process of making food, trees and plants give off oxygen. All living things — including humans — must breathe oxygen to stay alive.

The process of making food and oxygen is called photosynthesis (say: foto-SIN-thuh-sis). Here's how it works: The green leaves of a plant or a tree soak up water from the soil and carbon dioxide ( $\text{CO}_2$ ) from the air. ( $\text{CO}_2$  is the gas that we breathe out after we've breathed in oxygen.)

Then a green dye in the leaves called "chlorophyll" soaks up light from the sun. The energy from the sunlight is used to change the  $\text{CO}_2$  and water in the plant cells into sugar. Another product — oxygen — is also given off. The leaves then turn the sugar into food that keeps the trees and plants alive.

So, you might say photosynthesis is a matter of life and...um...breath!

*Question sent in by Lee Billings,  
Atlanta, GA.*



## DOES SAND ON THE BEACH COME FROM?

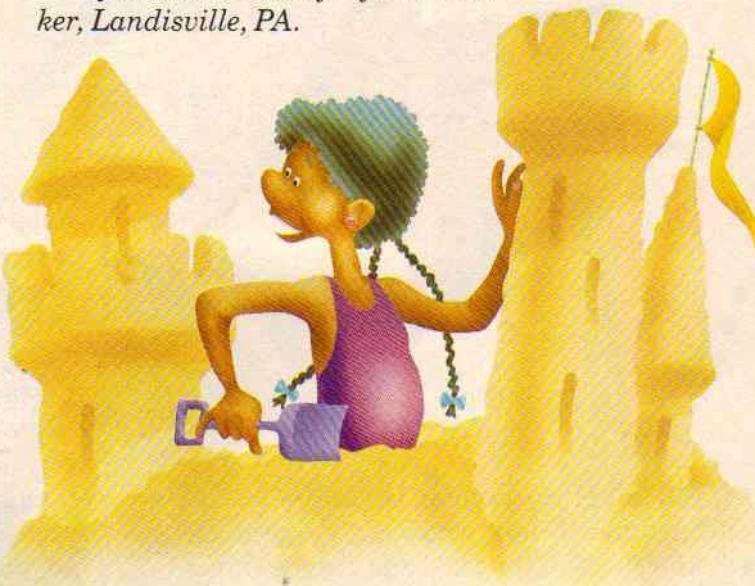
The sand on most beaches is made up of crumbled rocks. Over long periods of time, wind, rain, frost and glaciers wear rocks down. Ocean waves also break the rocks down by rolling over them and slamming against them.

Most of the sand on the beach comes from rocks and cliffs located near the shore. But sand also comes from rocks that crumbled inland — far from the shore. The sand was carried to the shore by rivers.

Not all sand is made up of crumbled rocks, however. The sand found on many Pacific islands and Florida beaches is made up of tiny bits of coral and seashells. Waves break them up and leave tiny pieces on shore.

This "sand"-tastic process takes a lot of time. The beaches you play on took thousands of years to form.

*Question sent in by Ryan Brubaker, Landisville, PA.*



ILLUSTRATIONS BY VALERIE MARSELLA

W  
H  
Y

## DO RABBITS TWITCH THEIR NOSES ALL THE TIME?

A rabbit twitching its nose is not just sitting around trying to look cute! It is very busy sniffing the air, checking to see who or what is around. Rabbits depend on their very keen sense of smell to alert them to danger.

Rabbits not only twitch their noses to sniff out danger, but their long ears are constantly twitching, too. They use their ears to hear the sound of an enemy approaching. A rabbit can move both of its ears at the same time or one at a time to pick up sounds of danger.

Rabbits have to be constantly alert — they can't do much to defend themselves against enemies. Because of this, a wild rabbit lives only about a year. Pet rabbits can live for five or more years. But even though a pet rabbit is kept safe and sound, it still has a "nose" for danger!

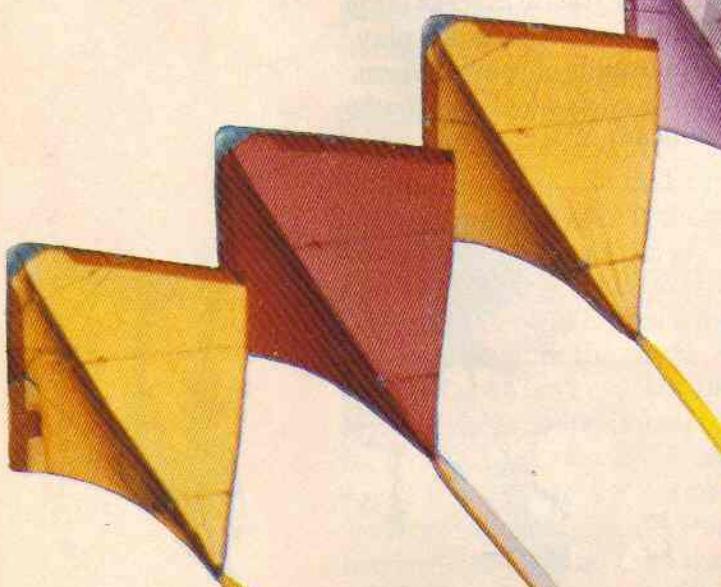
*Question sent in by Gregory Gril lot, West Palm Beach, FL.*

Do you have a question  
that no one seems able to answer?  
Why not ask us? Write to:  
Any Questions? 3-2-1  
Contact, P.O. Box 40, Vernon,  
NJ 07462

# FOR CHAMPION MISSY ROMER

# Pulling Strings

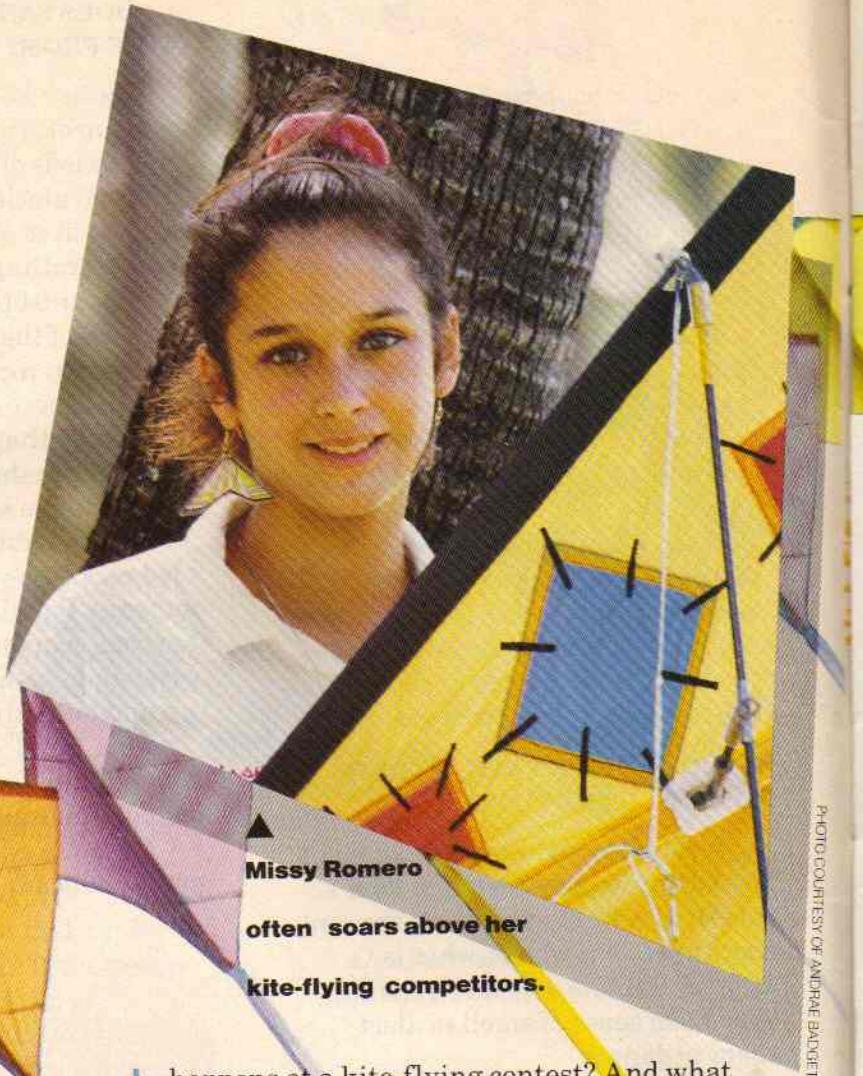
By Michael Rozek



If you tell Missy Romero to go fly a kite, she won't get mad. Missy, who is 13, is one of the best kite fliers in the U.S., and maybe the world.

Since she was eight, Missy has been entering kite-flying contests—and winning blue ribbons. In fact, she's even gone to Hawaii, Australia and Japan to compete. Missy told CONTACT: "Most of the people I fly against are adults. Some of them don't know how I can do so well. But when they watch me, they change their minds."

That sounds pretty cool. But what exactly



happens at a kite-flying contest? And what makes Missy such a good kite flier? To answer these questions, it helps to first understand a little about how a kite works.

"The basic reason a kite flies is that the wind pushes against it and shoves it upward," explains Dr. Jearl Walker. He is a professor of physics at Cleveland State University. "If you want to understand this better, put your hand out the window when you're riding in a car.

"First turn your palm down flat. Then tilt down the pinky side of your hand just a little bit. Your hand will start to lift up—just like a kite does. Then, if you keep your fingers together and point them toward the sky and then toward the ground, you'll feel the wind push your hand toward the car, or away from it.

"That's how the wind acts on a kite in the air," Dr. Walker says. "And it also shows that some-

# ROMERO, KITE FLYING IS A BREEZE.



one has to steer a kite to make it go in a certain direction. But flying a kite is harder than steering your hand. It takes skill."

That's where Missy Romero comes in. "In a kite contest," she says, "I'm scored on the dives and patterns I can get my kite to do in the air." For example, Missy might be asked to trace a figure eight, a pyramid shape, the form of a box, or a bowtie-shaped loop-de-loop. (Missy says the bowtie is the most difficult.) Or she'll just be judged on whatever she wants her kite to do.

Sometimes Missy will even make her kite dance to music. "Last year, I liked to fly my kite to Carly Simon's record of 'Itsy Bitsy Spider,'" she says. "This year, I like the song 'Zippity Doo Dah.'"

## Out-of-Sight Kites

Part of why Missy can do incredible tricks is that she flies special kites, called stunt kites. Normal kites are diamond-shaped. But stunt kites are triangular. They're also built differently from the paper and wood models you may know.

To catch more wind, stunt kites are made of a material called ripstop nylon. This material is also used for sailboat sails. Stunt kite frames are made of graphite or fiberglass. These materials are light yet sturdy. Plus, Missy controls the kite with two pieces of line called bridles, which are a lot stronger than string.

"The difference between a regular kite and a stunt kite is like the difference between a regular car and a sports car," she says. "When I go out to fly my stunt kite, I just set it on the ground and unroll 150 feet of line behind it. Then, I take the line, take two steps back, and it starts climbing."

But sometimes a stunt kite can fly so fast and high, it can get out of control. "Once," says Missy, "I was flying one of my kites on a beach, when a strong wind came up. I only weigh 93 pounds, so the kite started pulling me up."

PHOTO © ALL SPORT

◀  
Stunt kites are as  
colorful as they are  
maneuverable.

with it. It dragged me across the beach until the wind finally stopped!"

Mostly, though, Missy's kites do exactly what she wants them to—thanks to her hard work. She says, "Before a contest, I may fly my kite four or five hours each day, four or five times a week. And I work out, too. I lift weights and do aerobics, so I'm strong and my reflexes are sharp."

### Striving High

Another reason for Missy's success is her parents. Owners of a kite-making company in Missy's hometown of San Ramon, CA, they travel with her to kite contests and even design her kites. "I have a pink one with a black lightning bolt across it," she says. "And a white one, with a spider painted on it. But my favorite shows the space shuttle."

Missy doesn't spend all her time flying kites, of course. She's an honor student, and has been president of her junior high school's student council. In a couple of years, she hopes to attend college at the U.S. Air Force Academy. And someday she'd like to become an astronaut.

Even if one day Missy were to fly a space ship, she's sure she'd still enjoy flying kites: "The best part is that it feels so free. When you get your kite up in the air, you can make it do anything you want. Sometimes, it's like I'm up there flying with it myself."

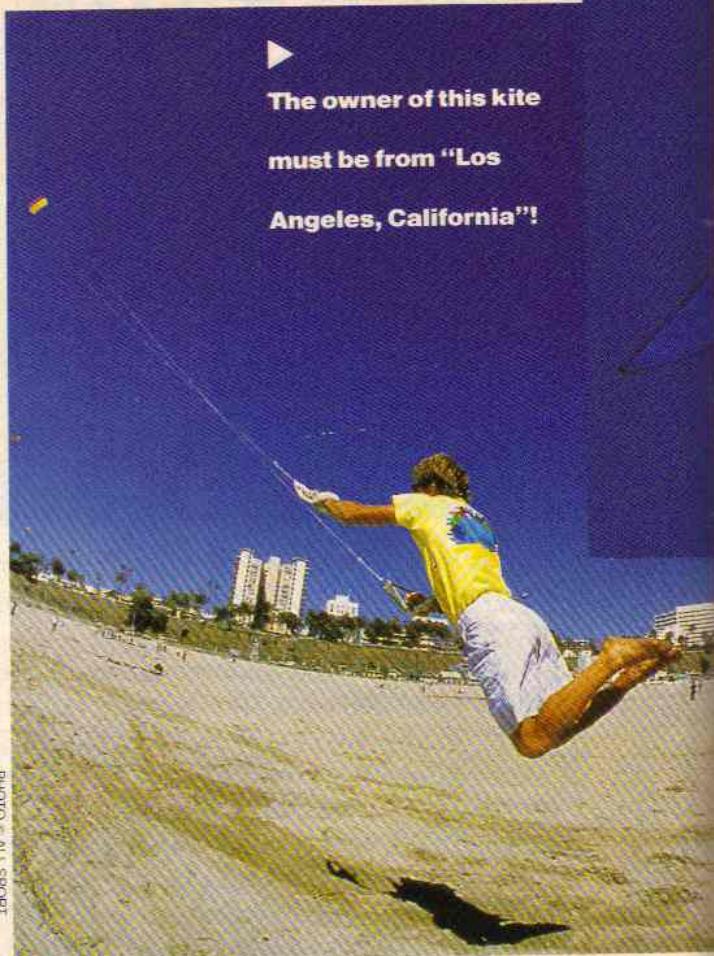


PHOTO: © ALL SPORT

The owner of this kite  
must be from "Los  
Angeles, California"!

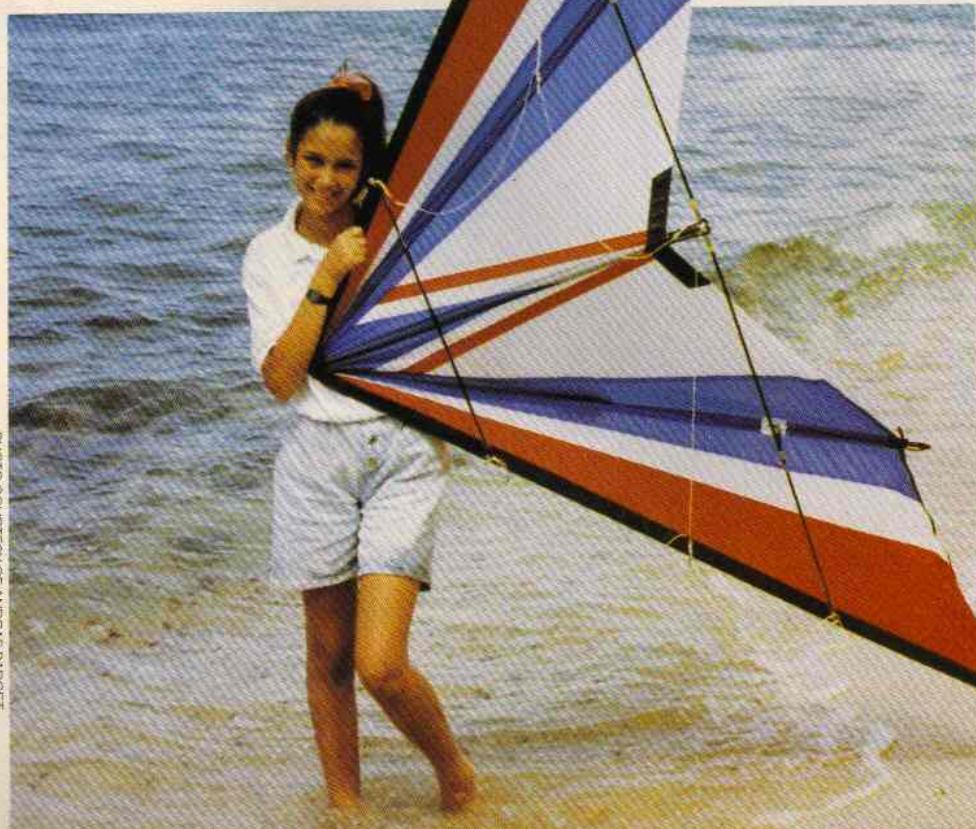


PHOTO COURTESY OF ANDRAE BADGET

Up, up and away!  
Sometimes a strong  
wind can lift a kite  
flier off the ground!

◀  
**Missy Romero**  
displays one of her  
stunt kites. Many of  
them are made by  
her parents.



PHOTO © THE GRANGER COLLECTION

# Kite Tales

Today, kite flying is done mostly for fun. But this wasn't always the case. For centuries, kites have been a tool for science and technology. Kites were invented in Asia. Long ago, people there used kites to help them build bridges: As a first step, kites had to be

used to sail rope across wide streams or gorges.

In 1749, two Scottish scientists attached a thermometer to a kite to measure air temperature at different altitudes. Until balloons

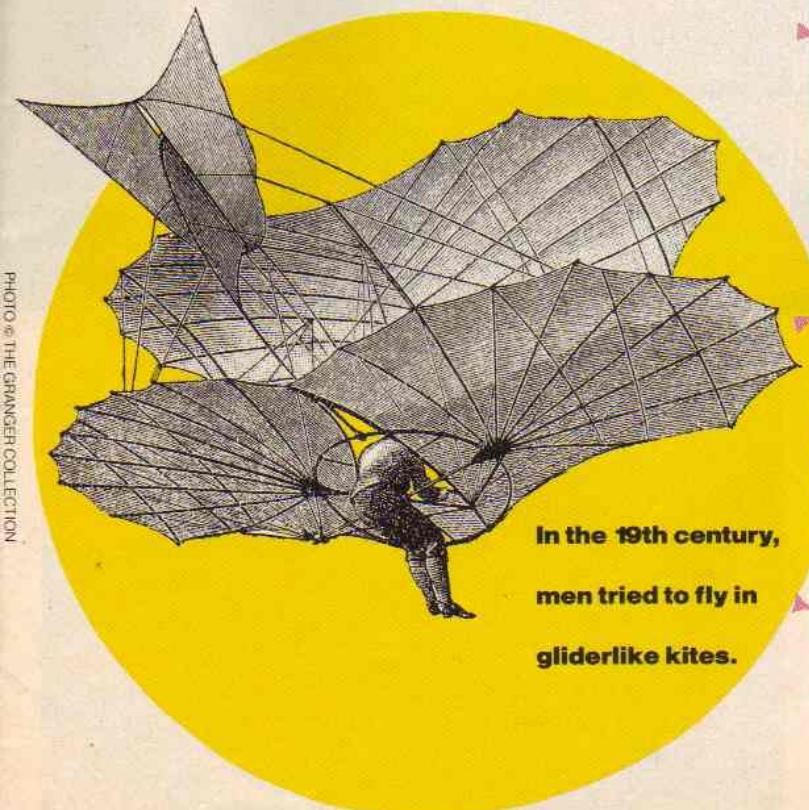


PHOTO © THE GRANGER COLLECTION

replaced them in the 20th century, kites frequently carried weather instruments high above the ground.

The most famous kite-flying experiment was performed by Benjamin Franklin. He wanted to prove that lightning was made of electricity. So, in 1752, he flew a kite, with a key attached to the end of the string, in the path of an approaching thunderstorm. Franklin hoped it would be struck by a lightning bolt. The kite did collect some of the electrical charge of the lightning.

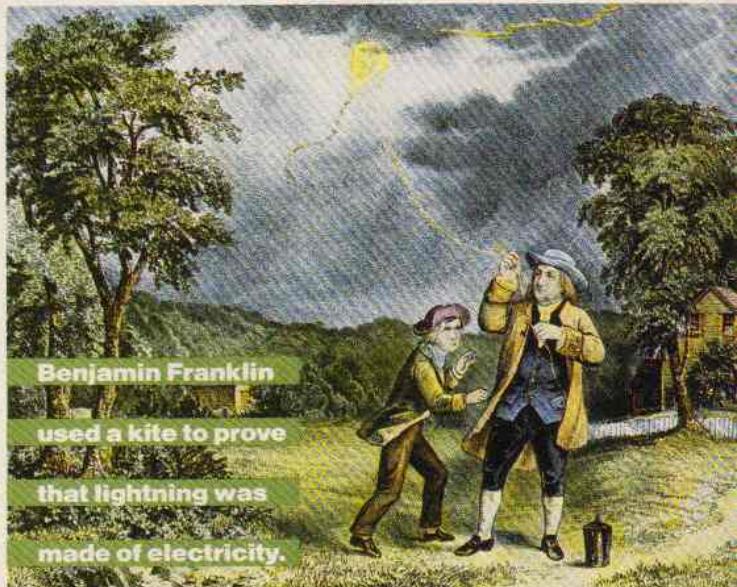


PHOTO © THE GRANGER COLLECTION

Luckily, Franklin lived to tell us the results of his dangerous experiment—several people died trying to repeat his feat. Don't you try it!

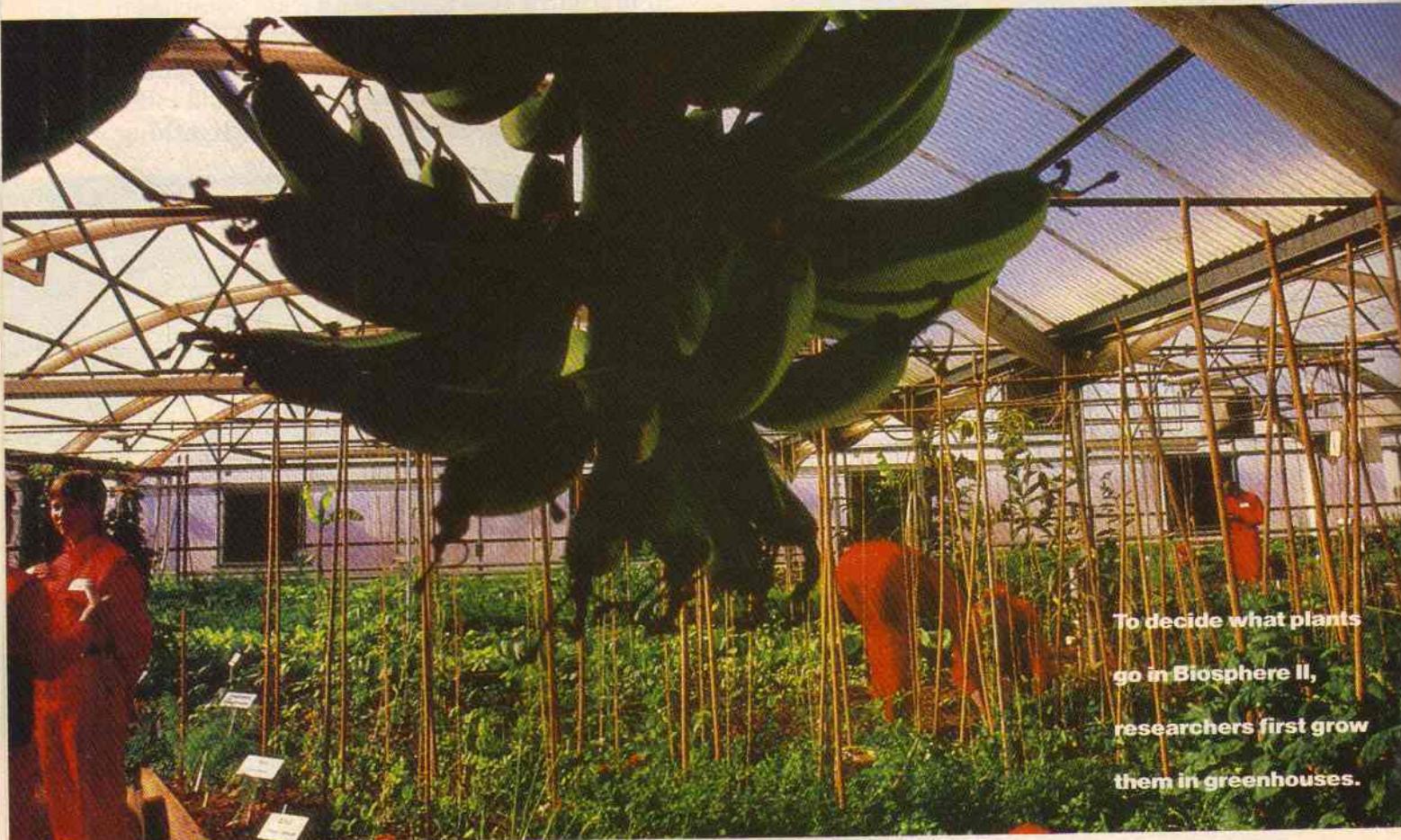
In the 19th century, kites were used in another risky way: to fly people. For example, in 1825 an English schoolteacher tied his daughter to a kite and sent her up 300 feet!

These "uplifting" experiences continued during World War I. The army tried to fly soldiers, standing in large kites, to spy on the enemy.

In World War II, the United States flew large box kites above war ships. The Navy wanted the kites to foul up the propellers and wings of enemy planes. The military also used kites for target practice. Nowadays, people don't fly kites to win wars—just to win kite-flying contests! ◆

**I**t is a warm, humid afternoon in a tropical rain forest. You Nearby, in a rocky hill, animals drink from a small pool of water. down the hill, you walk into...a wall! The high wall curves to form

# A WORLD TURN



To decide what plants go in Biosphere II, researchers first grow them in greenhouses.

**S**pread over two desert acres, near Tucson, Arizona, Biosphere II looks from the outside like a giant greenhouse. Inside it's like a terrarium for humans, plants and animals. Biosphere II may hold the future of Biosphere I—the term scientists sometimes use for Earth. A biosphere is the area of the planet where any life can exist. It goes from the atmosphere to the bottom of the ocean.

This September, Biosphere II is going to be

filled with plants and animals—and eight people. The wildlife and the humans will be sealed in Biosphere II for two years.

Why? One reason: Space scientists think it may be a model for a future city on the moon or on Mars. Because there's no oxygen to breathe in space, colonists may have to live in a sealed, domed structure, complete with all the things they need to survive.

But there's another, more important reason

see beautiful birds flitting in the branches of 35-foot-tall trees. When a gentle rain begins to fall you seek shelter. Scrambling a ceiling! Have you entered the Twilight Zone? No, you're in...

# DER GLASS

By Curtis Slepian

►  
The candidates for  
Biosphere II pose  
in an imitation  
tropical rain forest.

Candidate Linda Leigh tends  
to the kind of cacti that will take  
root in Biosphere II's "desert."

PHOTO © PETER MENZEL



PHOTO © PETER MENZEL

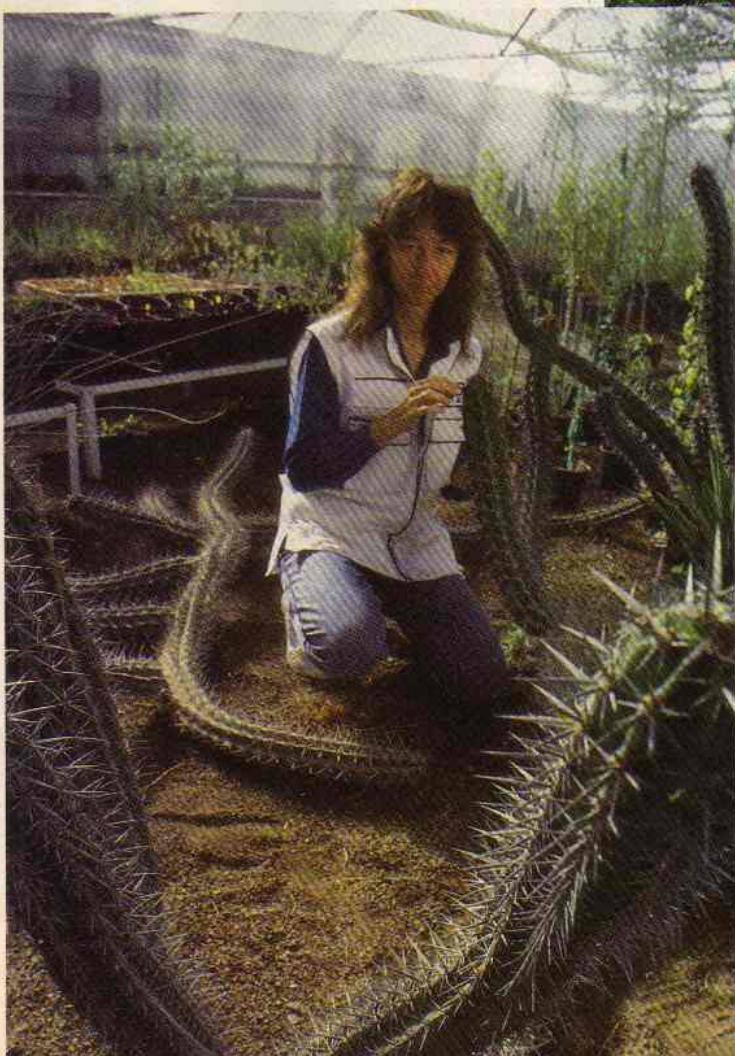


PHOTO © PETER MENZEL

why thousands of creatures will live in Biosphere II, says Kathleen Dyhr, an official with the project: to teach humans how to treat Earth's environment "a little better than we've done in the past." Studying how humans change Earth's biosphere is a giant job, because Earth is a giant place. It's a lot simpler, Kathleen Dyhr says, to figure out how people affect nature in something as small as Biosphere II.

It has taken six years and millions of dollars to create this miniature Earth. Built of steel and glass, its floors covered with soil, Biosphere II is divided into regions, or "biomes." There is a rain forest, a savannah (a flat grassy area), and a desert. A river flows from the rain forest through the savannah and into a marsh. There's also a 25-foot-deep saltwater "ocean."

Biosphere II even has a "mini-city"—a place for four men and four women to live. Alongside this area is a farm. ☺

## The World's Biggest Terrarium

Filling this 20th-century "Noah's Ark" will be more than 3,000 different types of life—from microbes and ladybugs to finches and carp.

Growing in the rain forest will be things common—banana trees, palms, cocoa plants—and uncommon—meat-eating pitcher plants and lithops, plants that look like tiny stones. In the savannah, tall grasses and acacia trees line the river. Cacti, jojoba (say *ho-HO-ba*) shrubs and bujam trees dot the arid desert.

Deciding what goes in this huge terrarium isn't an easy job. For example, to help pollinate the plants, the designers wanted a hummingbird. But which one of the more than 200 types of hummingbirds do you pick? Well, some hummingbirds only pollinate flowers of certain shapes or colors. Other types of hummingbirds have high-flying mating dances. In Biosphere II, however, they'd knock themselves out cold against the ceiling!

Scientists eventually chose the rufous-tailed hummingbird. The bird pollinates a lot of different blossoms and has a more down-to-earth mating dance.

It's also hard to build an ocean from scratch. Before they can stock it with fish, scientists must add minerals, algae and millions and millions of diatoms (tiny one-celled animals).

Biosphere II will have turtles, frogs, lizards, snakes and even a poison dart toad or two. The second largest animal included is a Galago. These are Africal lemurs—small, monkey-like mammals with big eyes.

## The Human Touch

But Biosphere II's largest and most interesting animals are the eight human volunteers, called Biospherians. Ranging in age from the mid-20's to early 50's, the men and women come from the United States, Germany, England, Australia and Mexico. Fourteen people have applied to live in Biosphere II, but only eight will be chosen to enter in September. All 14 are experts in some field important to the project, from raising animals to growing plants in greenhouses.

Candidate Linda Leigh, a botanist (a scientist who studies plants), has already gotten a taste of life under glass. She was left alone in a test

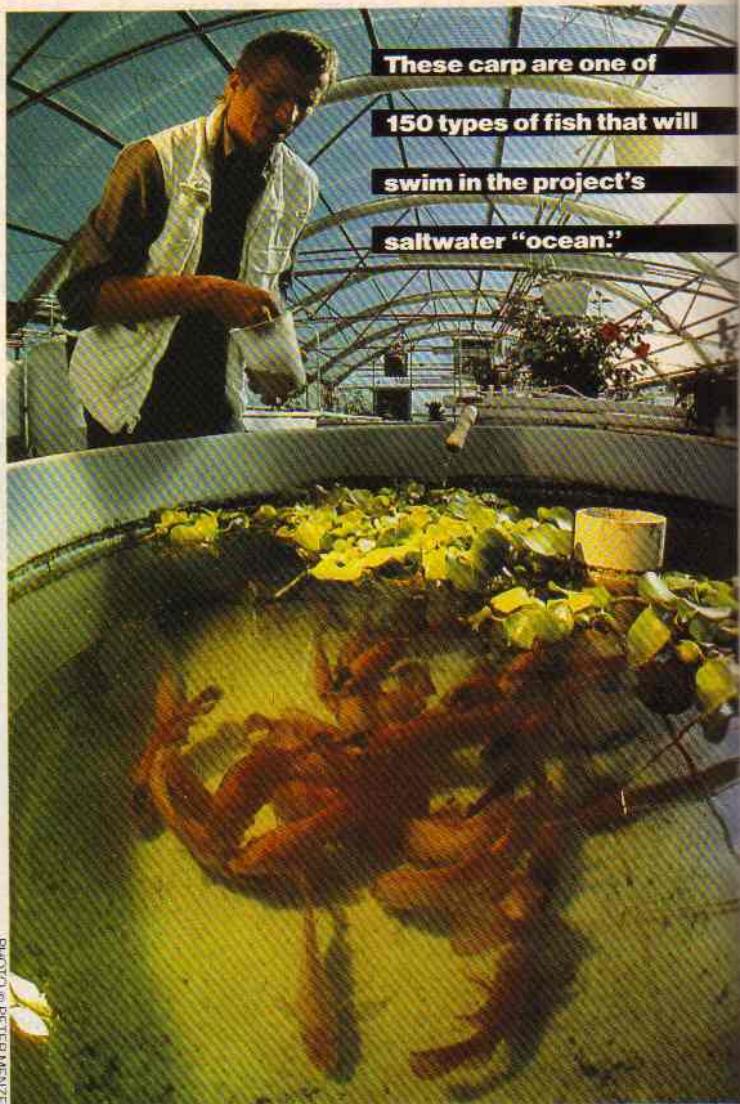


PHOTO © PETER MEINZEL

building for 21 days. Was she lonely? She told CONTACT, "I've been on many trips to remote places and have backpacked by myself. So being alone doesn't bother me."

The Biospherians will probably be too busy to feel lonely. On a typical day, explains Leigh, mornings will be taken up at meetings discussing what needs to be done. Then, the Biospherians will spend hours on the farm. There they will plant, care for and harvest food. In the afternoon, they will do research in the wilderness biomes. The rest of the time they're on their own.

Free time won't be boring: Biospherians will have their own cozy apartments. Each contains books, a stereo, a computer, a TV and a VCR. Kathleen Dyhr, who is a nutrition expert and

This model of Biosphere II was photographed near where the real thing is being built.

As seen from above, a floor plan of the "world under glass." A wire screen will keep insects and animals from entering the living quarters and farm.

PHOTO © PETER MENZEL



PHOTO © SPACE BIOSPHERES VENTURES

herself a candidate, says, "I'll be able to talk to friends around the world on a computer. So it's almost the same life as I live now, except that I wouldn't be traveling!"

One thing they won't be calling the outside world for is take-out pizza. Biospherians will eat only what Biosphere II provides. On the farm, they'll plant, among other foods, potatoes, carrots, lettuce, papayas, mangoes and figs. Chickens and pigmy goats will provide meat, as well as produce milk and eggs.

But making an egg sandwich takes more work. Wheat must be grown, harvested and threshed. Then it will be ground into flour. Finally, it will be baked into bread.

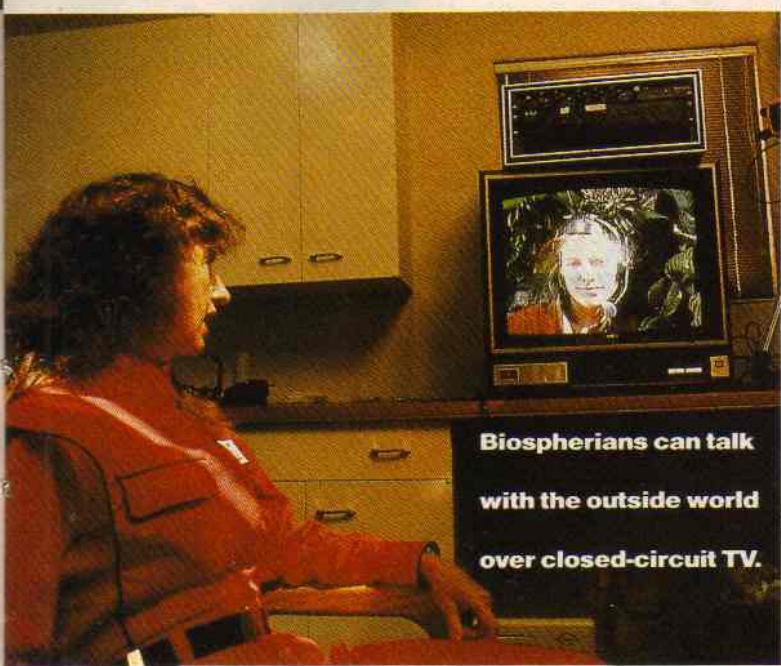
## Waste Not, Want Not

Waste will be another problem. There is no plumbing to whisk human waste far away. Says Dyhr, "In order to do Biosphere II, we had to get it through our heads that there is no such thing in nature as waste." In Biosphere II, animal and human waste will be recycled back into the soil and the marsh.

Water is also recycled. First, the water in Biosphere II's ocean evaporates. Then, this water vapor comes in contact with large coils hanging above the rain forest. On the cold surface of the coils, the water vapor "condenses" into droplets of water—just as it does on a pitcher of ice tea in the summer. Finally, these drops fall as rain, which flows in a stream back to the ocean. Fresh, clean drinking water is produced the same way.

Biospherians can talk with the outside world over closed-circuit TV.

PHOTO © PETER MENZEL





While visiting the Biosphere II research area, kids sample the sort of food the Biospherians will be eating for two years. Just about everything will be on their menu—except Coca Cola!

No pesticides are allowed in Biosphere II. Instead, ladybugs will take care of any pesky insects.

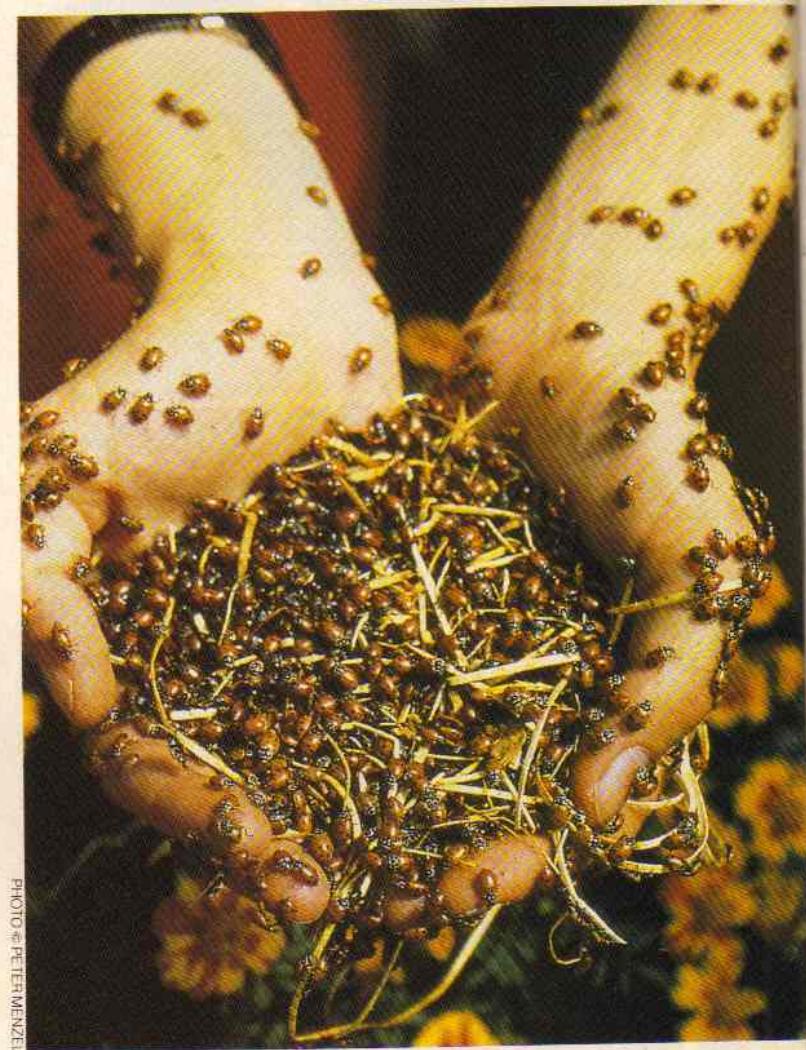
After the doors to the outside world are shut airtight, the oxygen supply will be taken care of naturally: The carbon dioxide (CO<sub>2</sub>) people and animals breathe out is absorbed by plants and trees. They, in turn, give off oxygen.

Being in Biosphere II will be a little like being shipwrecked on an island for two years. Most people might be nervous about being cut off from family and friends. But not the Biospherians. To them, it's an adventure: "This will involve something never done before. It's very exciting!" says Leigh.

What will the volunteers see when they look out through the glass walls? Most likely, lots of folks staring back. A visitor's center is planned, and around the outside of Biosphere II will be a pathway. And there will be special viewing areas for people to peek inside.

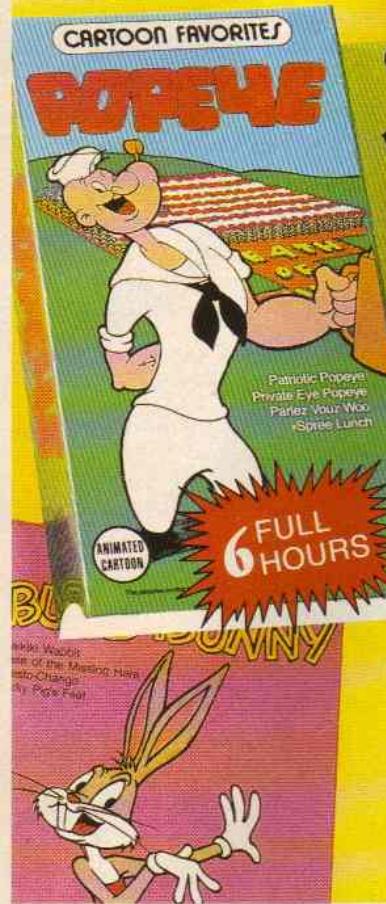
And the more people, the better, believes Linda Leigh. She wants to capture the "interest of all the people on Earth. I want the project to get across the idea that everything a person does in a biosphere affects the total environment."

Kathleen Dyrh expects that Biosphere II will make people more aware of how amazingly Earth maintains the balance of life: "For the most part, the Earth has taken care of us, so we're like babies." Biosphere II, she and others hope, will help us grow up. ♦



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# LEAPING LIZARDS?

Old ideas about  
dinos could be  
for the birds.

By Elizabeth Vitton

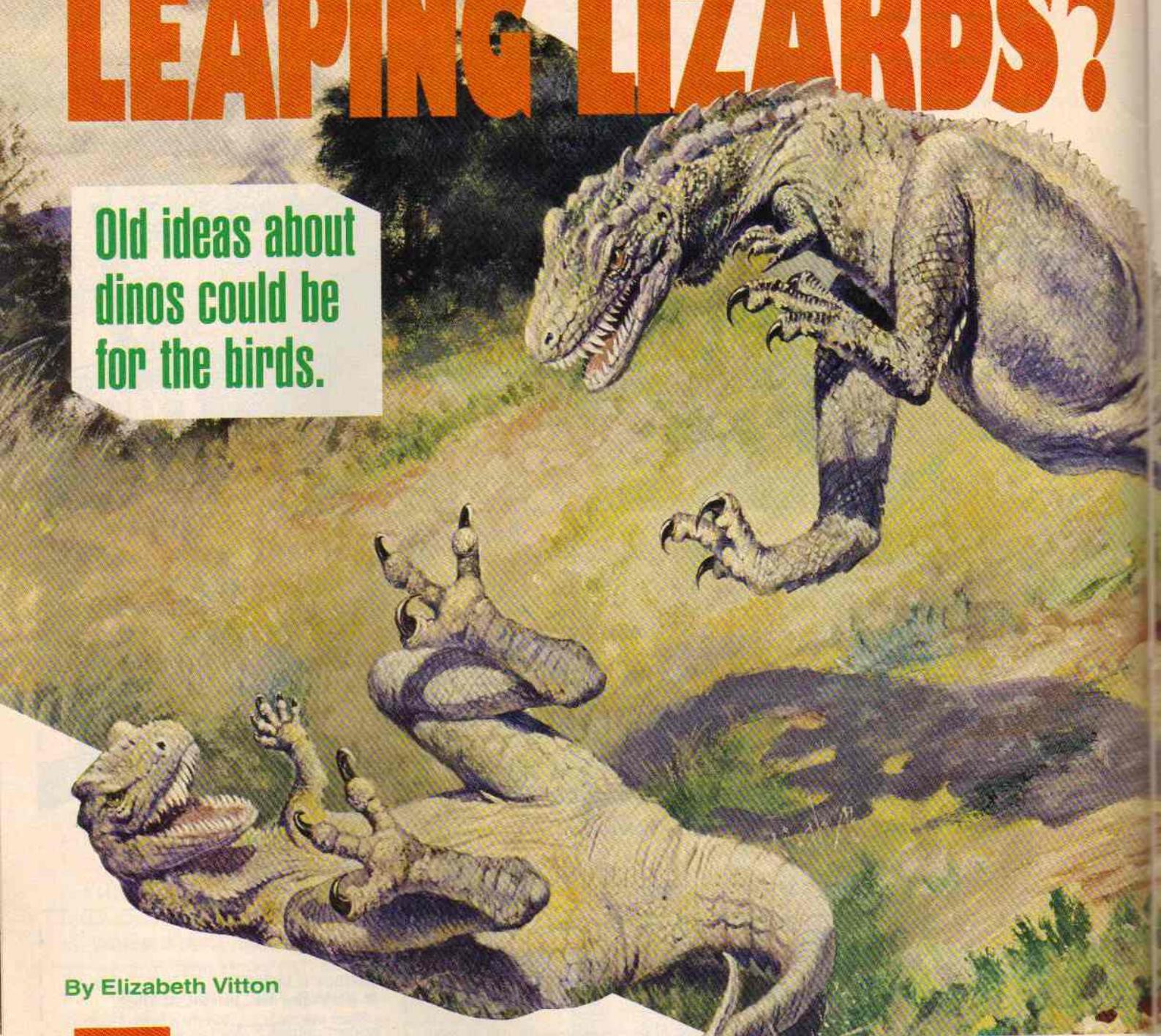
**T**ravel 65 million years back in time to a strange, marshy forest. Suddenly, you hear a rustling noise. ROAR! A swamp creature with six-inch-long fangs stomps toward you! It's the king of the prehistoric jungle—a Tyrannosaurus rex! But hey, don't freak. Based on

all those books you read about dinos, you're sure you can outrun and outsmart this giant, slow-moving, pea-brained reptile. Right? Wrong!

Thanks to some amazing dino discoveries, many scientists are now saying that dinosaurs weren't sluggish reptiles

who lived in swamps, after all. These experts believe dinosaurs were actually speedy, colorful and warm-blooded creatures. And what's most surprising: Many scientists now think the dinos are more closely related to birds than to lizards.

One of these new thinkers is



# MAYBE NOT.



ILLUSTRATION BY GREGORY PAUL

Some scientists now think

there might have been colorful

markings on the Chasmosaurus.

Why? To attract mates.

Dryptosaurs, or  
"wounding lizards,"  
had muscular legs and  
eagle-clawed feet.  
Scientists think they  
used their huge hind  
limbs to leap kangaroo-  
style on their enemies.

ILLUSTRATION © CHARLES R. KNIGHT/AMERICAN MUSEUM OF NATURAL HISTORY

ties in body structure with their ancestors. For example, the "drumstick" of a *Tyrannosaurus rex* and a modern-day chicken are very much alike. Dinos and birds also share a complicated system of air canals woven throughout their skulls. (These air pockets and tubes allow air to move between the lungs and skull.)

"Dinosaurs had air-cooled brains," Bakker adds, laughing. "They were definitely airheads!"



## Bird Brains

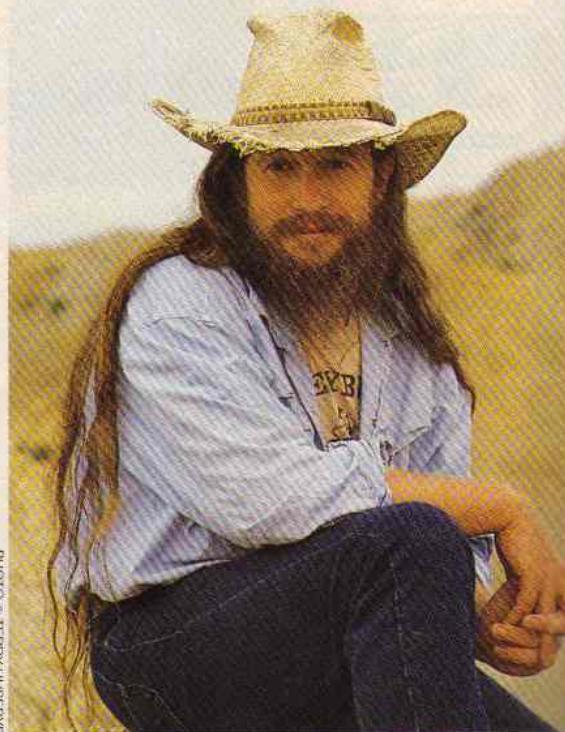
According to Bakker, dinos were birdlike in other ways, too. Although there *were* dinosaurs that weighed as much as 10 elephants, there were also many no bigger than the size of a chicken. And Bakker thinks a few of these dinosaurs were at least as intelligent as birds. "Many of them had brains similar in size to birds who have a very complex 'computer' in

PHOTO © TERRY HULSEY

Robert Bakker of the University of Colorado. He is a paleontologist—a scientist who studies fossils. "When you really study the skeletons of dinosaurs, they look like birds," Bakker told CONTACT. "In fact, I believe that birds are direct descendants of dinos."

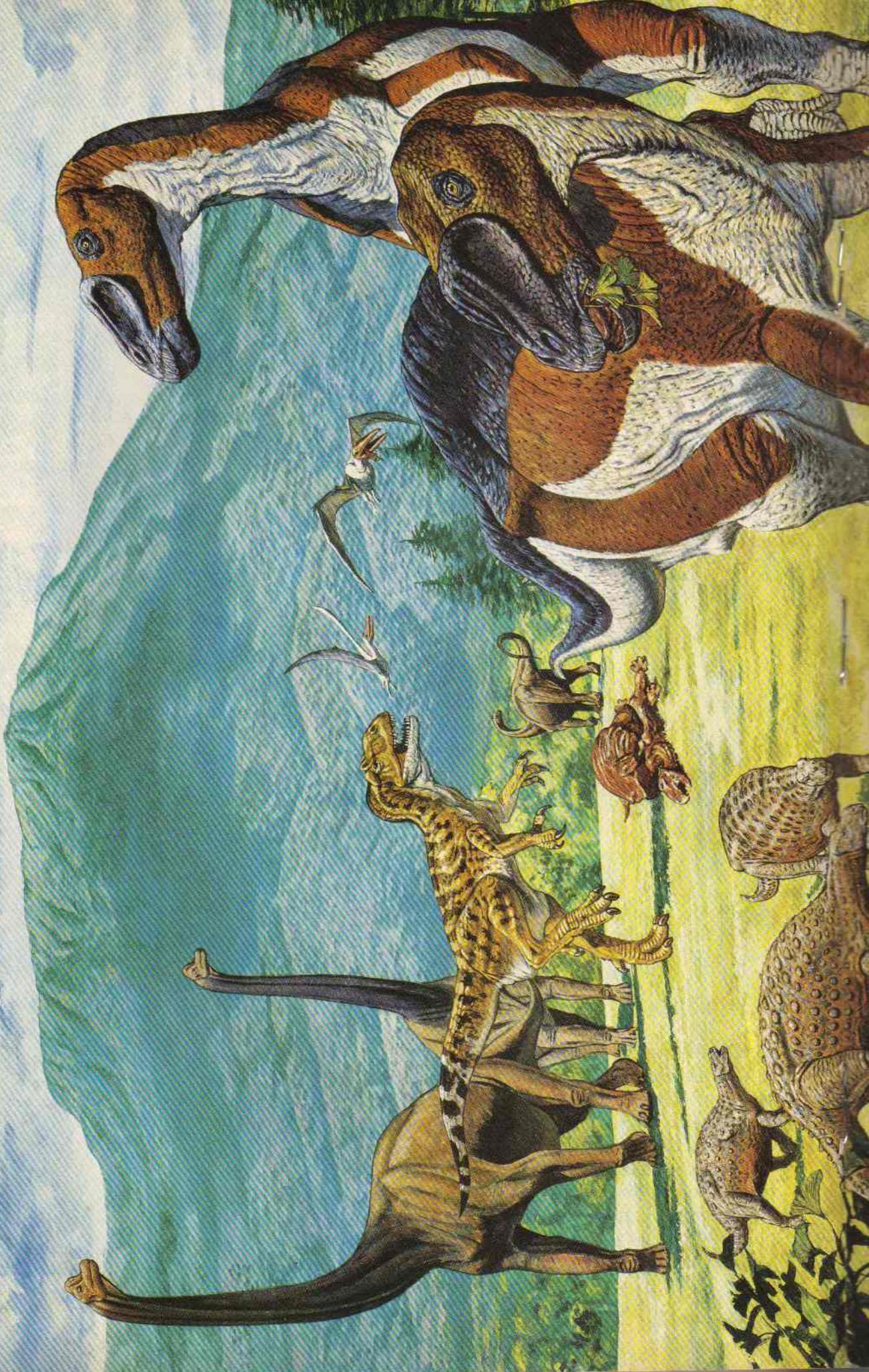
Birds share many similarities

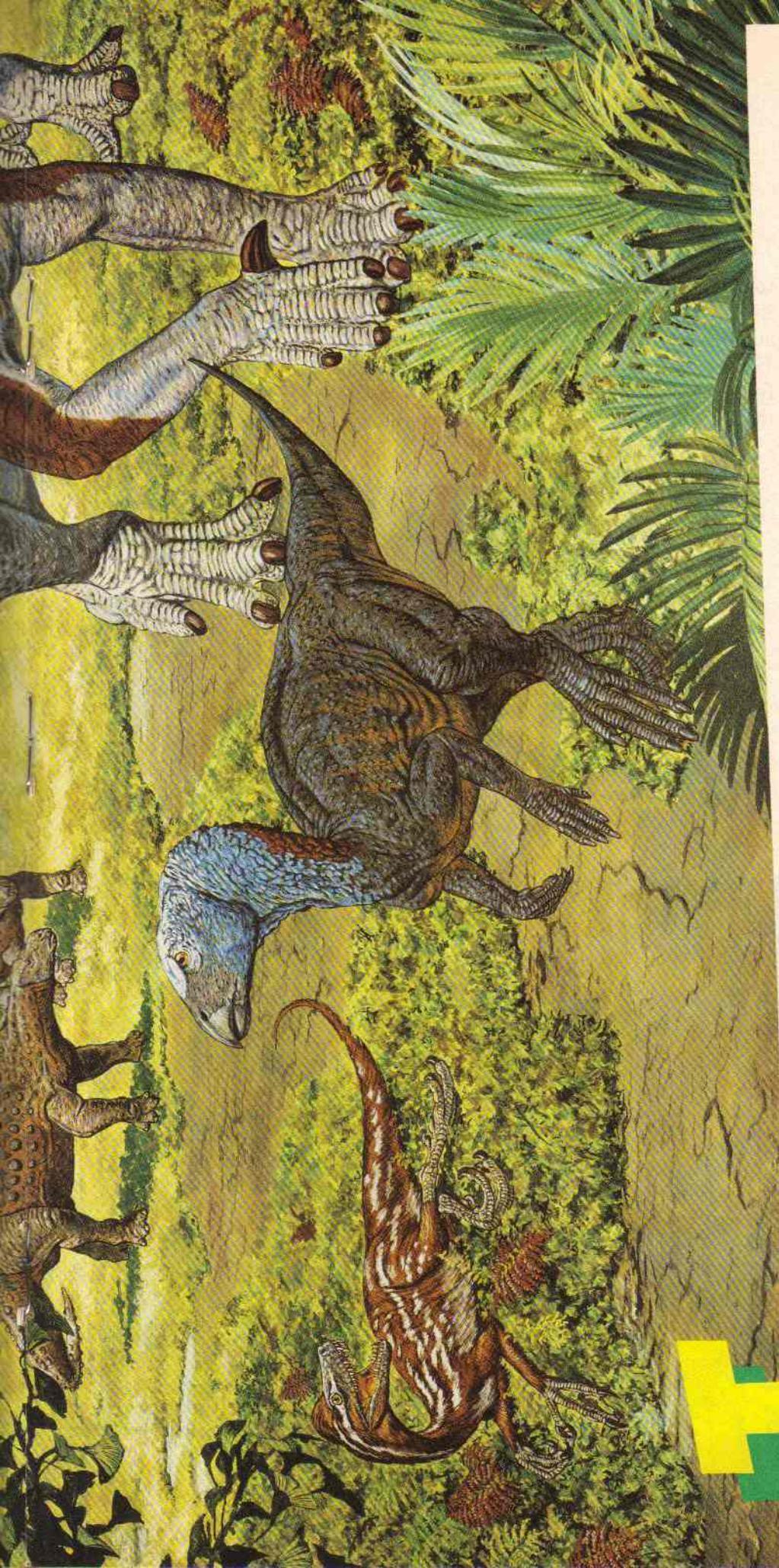
▼ Dr. Robert Bakker has been  
digging up new ideas about  
dinos for 28 years.



# WHEN DINOS ROAMED THE EARTH

A CONTACT POSTER





These dinosaurs were Aussies! They lived 100 million years ago "down under" in the warm, moist climate of what is now Australia. Like their distant relatives, the crocodiles, dinos had a never-ending supply of teeth. New teeth constantly replaced the old ones. This is why the dinosaurs had jagged teeth.

**Some dinosaurs lifted**  
their tails off the ground  
as they ran. This helped  
them keep their balance.  
Dino tails might also have  
been used as "seats" to  
balance on.

The Pterosaurs, or "winged lizards," in this picture were neither lizards nor dinos. They were flying reptiles that flew the "friendly skies" for more than 140 million years.

there," he says. (Besides, dinos had to be somewhat brainy—they were smart enough to be around for more than 140 million years!)

If you still don't think birds and dinos are related, says Bakker, then seeing is believing. Seeing in *color*, that is. Bakker believes that dinos, like many birds today, could see in color. "We know that the visual cortex of the dinosaur brain was large, just as it is in birds," he explains. (The visual cortex is the part of the brain that controls vision, including the seeing of color.)

Birds have excellent color vision to help them identify and attract mates of the same species. Because color patterns help identify a particular species, Bakker thinks it's possible that many dinos had bright colors and markings for mating purposes.



## Walking on Eggshells

Other scientists, like paleontologist Jack Horner, are coming up with their own surprising new dino news. In 1978, Horner discovered the first evidence of dinosaur nests in Montana.

Horner studied dozens of football-sized eggs and other fossils at the site. This led him to believe that the lifestyles of dinos were more like those of modern-day birds than of reptiles. He found evidence that some dinos—like the 30-foot-long duck-billed *Maiasaura* (say: MY-ah-sawr-uh)—lived in squawking colonies. They built their nests side by side just as pelicans do. And, Horner says



PHOTO © DINAMATION INTERNATIONAL CORPORATION



PHOTO © DINAMATION INTERNATIONAL CORPORATION

**These roaring robots are challenging old dino displays. Rather than just showing fossil skeletons, some museums now display life-size models in living color.**

the maiasaur actually took care of their young. That's something that reptiles like turtles and lizards don't do.

Horner also believes some dinosaurs had complicated ways of communicating with each other. Meat-eating dinos, which hunted by themselves, could probably hiss or roar. (Although, some scientists now believe that the *Tyrannosaurus rex* actually made more of a chirping noise!)

But Horner says plant-eaters, which lived in herds, were more likely to make a variety of sounds than meat-eaters. "If animals live in a herd, it's helpful for them to be able to communicate with one another," he told CONTACT.

Horner thinks that duck-billed dinos, like the maiasaur, could make many different noises through echo chambers in their skulls. "They

had hollow bony crests on top of their skulls," he explains. "By blowing air through these chambers, they could honk and hoot like geese."



### Hot Stuff?

Until the late 1960's, most scientists would have hooted at the idea that dinos were anything but cold-blooded reptiles. Some still do. But many scientists are now arguing that dinos were warm-blooded animals.

Cold-blooded animals, like crocodiles and snakes, can't control their body temperature. They depend on the sun to heat their bodies and the shade to chill out.

Warm-blooded animals, however, have a "built-in" thermostat that helps control their

body temperature. So, some scientists say, if dinos could control their own body temperature, then they weren't really reptiles.

Dr. Horner has been comparing bones of birds, crocodiles and dinosaurs to help solve this hot mystery. He believes that dinos are warm-blooded because there's evidence that they grew very fast. Usually, warm-blooded animals (like birds and mammals) grow quickly, and cold-blooded animals grow slowly. For example, crocodiles will grow about a foot a year, while ostriches may shoot up nearly five feet.

Horner says there's a lot of similarity between bird and dinosaur bones. "They're both fast-growing," he told CONTACT. "Fast-growing bones have lots of canals—you can see the blood vessel passageways in the bones. The dino bones have

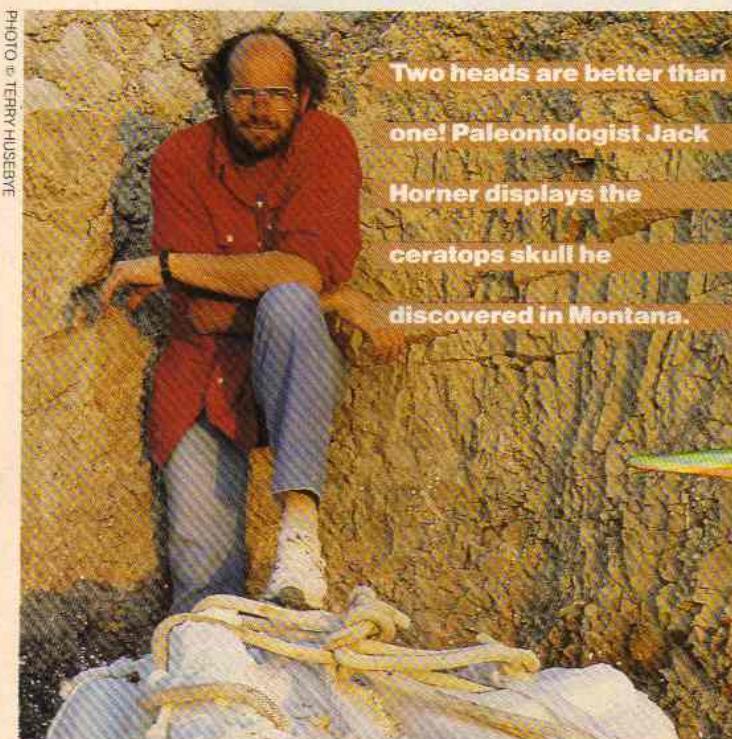
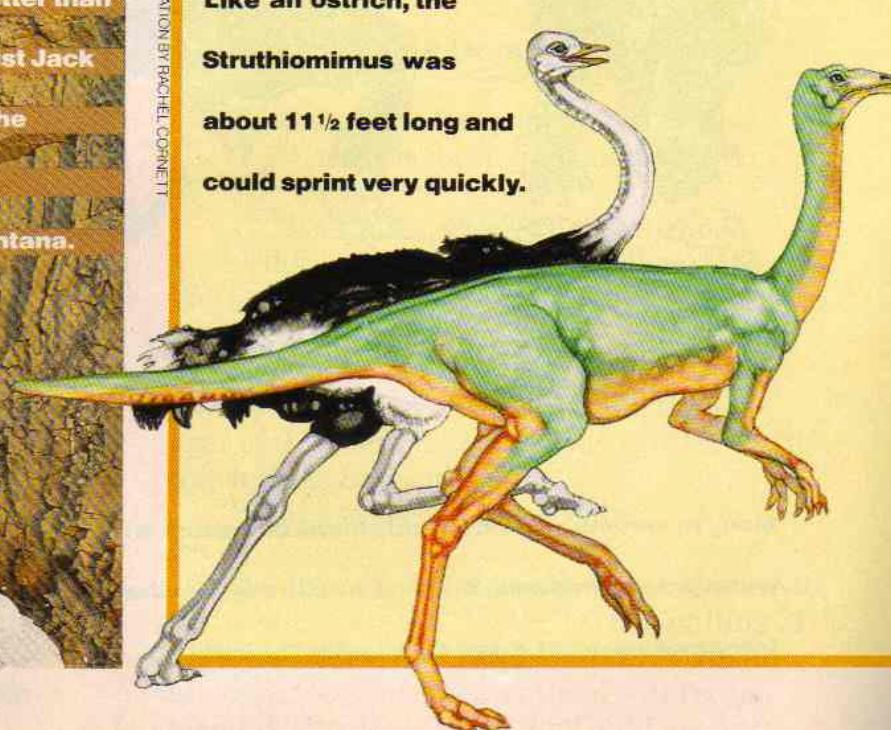


ILLUSTRATION BY RACHEL CORNETT

Like an ostrich, the *Struthiomimus* was about 11½ feet long and could sprint very quickly.



as many holes in them as birds, and far more than cold-blooded reptiles."



## Monsters in Motion

Robert Bakker agrees that dinos were warm-blooded creatures. Why? Because they were "big-hearted"! "The dinosaur chest cavity is huge. They must have had huge hearts and lungs, which means they had the energy to run long distances," he explains. "Crocodiles and lizards have very shallow chest cavities. They can run for short distances, but their hearts can't pump enough blood to run long distances."

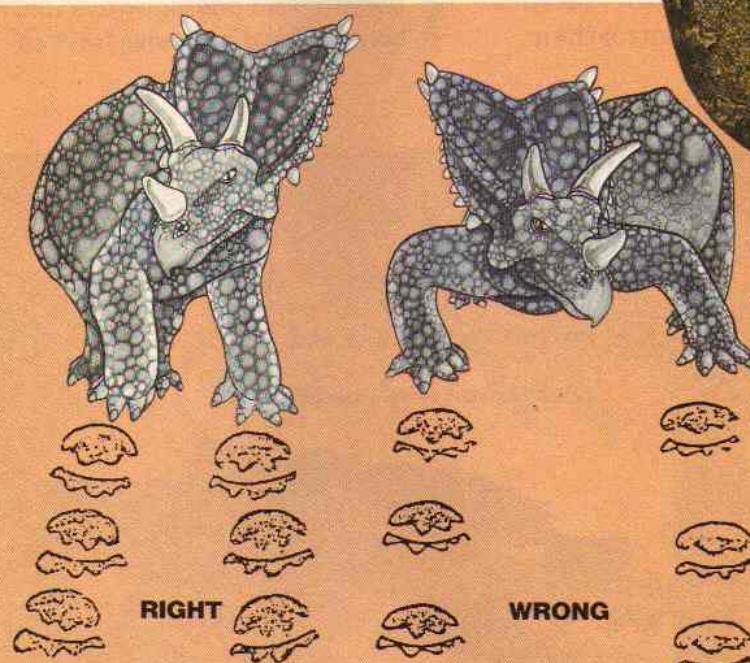
After measuring the remains of dinosaur tracks, Bakker now

thinks many dinos moved faster than modern-day reptiles. "They really cruised," Bakker marvels. "Some could gallop 40 miles per hour!"

In spite of lots of new evidence, it's still very popular to think of dinosaurs as cold-blooded lizards. Until recently, many museums displayed dinosaurs in lizard-like poses. (Their elbows were bent and their tails dragged on the ground.) "It was what I call pretzel logic," explains Bakker. "Because scientists thought dinosaurs were reptiles, they made them look and act like reptiles."

Now, most scientists

A newborn maia-saur's shinbone compared to an adult's shows how quickly dinos grew.



Many museums still incorrectly show dinosaurs with widespread forepaws. But dino tracks suggest that forepaws were put down right under the body.

ILLUSTRATION BY RACHEL CORNETT

agree that dinos used their tails for balance and walked with their legs straight down below their bodies.

In the last 20 years, scientists like Bakker and Horner have turned old ideas about dinos upside down. Dinosaurs are no longer thought of as dim-witted, plodding giants.

More likely they were belowing, lively, bird-like creatures who managed to survive on Earth nearly 30 times as long as humans have!

"After all, birds are direct descendants of dinos," says Bakker. "So, in a way, the dinos aren't extinct!" ◆

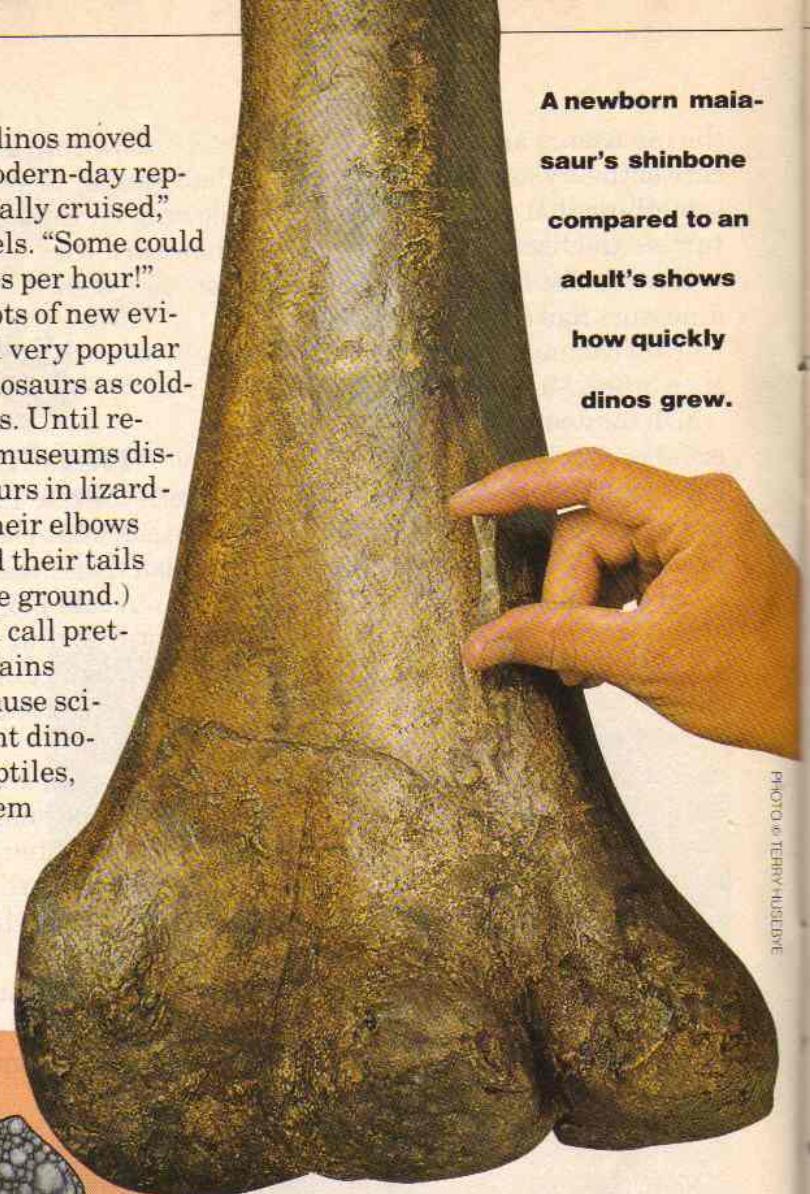


PHOTO © TERRY HUSEBY

# THE BLOODHOUND GANG

## THE CASE OF THE TYRANNOSAURUS WRECKS

by Dan Elish



**T**he Tyrannosaurus reared its head, growled and snapped shut its mighty jaws. Nearby, a Brontosaurus craned its long neck to reach a leaf on the high branch of a tree.

"Dinamotion shows how dinosaurs really looked and moved," said the tour guide.

The Bloodhound Gang gazed around the room. They were surrounded by realistic models of 20 different kinds of prehistoric creatures.

"Isn't it true," Vikki asked, "that Dinamotion has created a stir?"

The tour guide nodded. "It's causing a big controversy now. Some scientists don't like that we guessed how dinosaurs looked. We're getting a lot of publicity about it."

Just then, that same Tyrannosaurus let out a loud moan and began swinging its head back and forth. Jets of smoke streamed out of its mouth and ears.

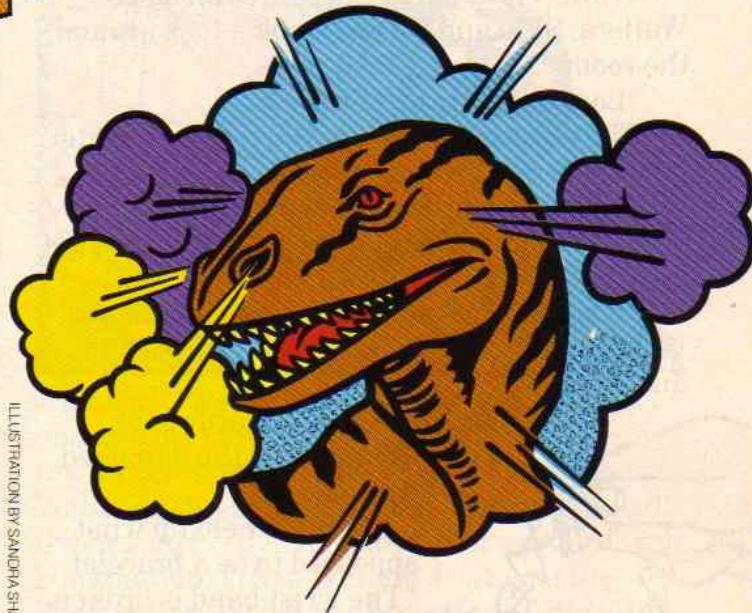
A crowd began to gather. The tour guide looked horrified: "Something's wrong!"

The beast began jerking back and forth. With a whirring noise, its head spun around and fell with a crash at the Gang's feet.

"What was that?" Ricardo asked. "A demonstration on how they became extinct?"

"This can't be happening!" the tour guide

ILLUSTRATION BY SANDRA SHARP



wailed. "Computers run these things."

"In that case," said Vikki, "let's take a quick look at the control room."



### **Lost Teeth from a Lost World**

**W**hen the Gang got to the control room a short, bald man was running out.

"Isn't it horrible?" the man cried. Vikki said, "We're the Bloodhound Gang. Were you in here when the dinosaur exploded?"

"Certainly not!" the man said. "I got here five seconds ago. I'm Bud Wallers, the manager of this exhibit. Why, today of all days, did this have to happen?"

"What's so special about today?" Skip asked.

"Because all the local papers are coming to review this exhibit," Wallers cried, pulling at his few remaining strands of hair. "With an accident like this, none of them will recommend it. It's all my fault! And only my first month on the job, too!"

# THE BLOODHOUND GANG

While Vikki did her best to calm down Wallers, Skip and Ricardo took a look around the room.

"Look!" Skip said, pointing.

The wiring from one of the main computer terminals had been ripped out.

"Not a very professional job," Vikki observed. She turned to Wallers. "Who can get into this room?"

"It's never locked during museum hours," Wallers said. "Anyone could have slipped in and done it."

"Check this out!" Ricardo said, reaching behind the damaged terminal.

Ricardo held up what appeared to be a bracelet. "The wrist band is broken," Vikki said. "It must have slipped off someone's arm."

"It's made out of teeth," Skip said. "Sharp teeth."

"Indeed," Wallers agreed. "They're fossil teeth. I'm sure Harry Billings, the famous paleontologist, could help you identify them."

Skip looked at the Gang. "I guess we'd better pay him a visit."

## A Bone to Pick

**O**ne thing I don't get," Vikki said, ringing the bell at Professor Billings' house, "is how a crook could be so careless as to lose a bracelet at the scene of the crime?"

"It could happen," Skip answered. "The string holding it together was old. And whoever committed the crime was probably in too much of a hurry to notice."

They heard the sound of many locks opening. Then, an elderly man opened the door.

"I'm Professor Billings. May I help you?"

"We're the Bloodhound Gang and we wondered if we could ask you some questions?" Vikki asked.

"Oh, dinosaur lovers, no doubt. Do come in," he said, locking the door behind him. "I had a break-in a few months ago, so I am careful about security. I guess you want to see my lovely bones. This way, young people."

Professor Billings' study was like a museum. Cases were filled with prehistoric fossils. Best of all, nothing was locked or sealed.

"I dug up all these bones and teeth myself," said the professor, proudly.

"Sir," said Vikki, holding out her hand. "Have you ever seen this bracelet?"

"Why, yes," he said, surprised. "It's mine. I made it myself."

"When did you notice it was missing?" Skip asked.

"I didn't!"

The Gang told the professor what had happened at the Dinamotion exhibit.

"Oh, dear," Professor Billings said. "I have no reason to hurt Dinamotion. Anything that promotes knowledge about dinosaurs should be encouraged. But I remember that man Wallers. I believe he works for Dr. Harvey Leach."

"Harvey Leach?" Skip said. "Who's he?"

"Another paleontologist in town," the professor replied. "Wallers came by two months ago asking me if I would approve a research



paper Leach was writing. The paper tried to prove that dinosaurs were warm-blooded. I refused to sign. In my opinion, the evidence isn't yet entirely clear."

"When's the paper due out?" Vikki asked.  
"Any day now," Professor Billings said.  
"Hmmmm," muttered Vikki. "Leach definitely seems to be another piece in the jigsaw puzzle."

"Let's see where he fits in!" chimed in Ricardo.

### **Cold-Blooded Doctor**

**F**irst, the Gang picked up Lieutenant Trowbridge and filled him in on the case. He drove them in his unmarked police car to the place outside of town where Leach was digging up fossils.

"Dr. Leach, please?" Skip asked when they arrived.

Several minutes later, a thin man wearing a floppy sun hat approached the Gang...and right next to him was Wallers.

"Hello, Mr. Wallers," said Vikki. "You never told us you worked for Dr. Leach."

"Oh, yes," Leach said, slapping Wallers on the back. "Bud Wallers is one of the most knowledgeable dinosaur men around. His ideas are a big help. Now quickly tell me what you want. The newspapers are about to interview me about my extraordinarily clever research paper."

While Leach explained how smart he was, Vikki turned to Wallers. "You were right," she said. "The bracelet belongs to Professor Billings."

"I'm always glad to see crooks brought to justice," smiled Wallers.

"Me, too," said Vikki. "And you know what? The professor told us that the teeth on this bracelet are from a Brontosaurus. Isn't that interesting?"

Wallers took the bracelet in his hand.

"What's Vikki up to?" the Lieutenant whispered to Skip.

"Uh, yes," Wallers said. "A Brontosaurus tooth. Absolutely correct."

"I get it," said Ricardo out loud. "Wallers is at the root of the crime."

### **How Did He Know?**

**T**his is the sharp tooth of a meat eater," Vikki explained, showing it to Trowbridge. "Anyone who claims

to be Dr. Leach's assistant would know that in a second. The Brontosaurus was a plant eater—its teeth were dull and flat. Wallers can't be an expert. He must be a guy Leach hired to do his dirty work."

"But why?" Trowbridge asked.

"I think I know," Skip said. "Working for



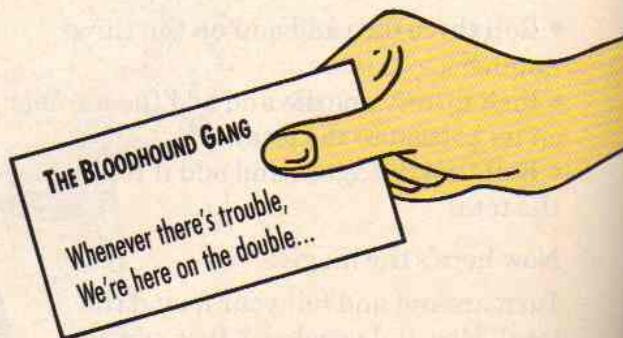
Dr. Leach, Wallers asked Professor Billings to approve his paper. While in his house, he saw the bracelet. After Billings said no, Leach told Wallers to break into Billings' home and steal the bracelet. Then he had Wallers get a job at Dinamotion. When Wallers destroyed the Dinamotion, he left the bracelet to frame Billings. In one fell swoop, Leach no longer had to share publicity with Dinamotion—and he got back at Billings!"

"Look at this," Ricardo said the next day in the Gang's office.

On the front page of the newspaper was a picture of Dr. Leach being handcuffed.

Vikki laughed. "He got a lot of attention from the newspapers—but not the kind he had hoped for."

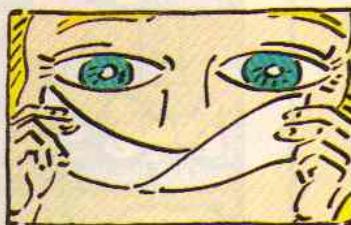
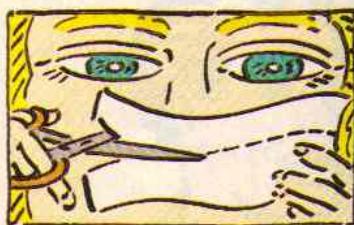
"That's the tooth, the whole tooth and nothing but the tooth!" chuckled Ricardo. ◆



CREEP INTO THE WORLD OF...

# BLACKSTONE'S **M** **A**

**MATH TRICKS TO**



**BUILD A  
ROAD TO**

## **NOWHERE**

- 1 Cut a strip of paper about one inch wide.
- 2 Give one end a half twist.
- 3 Tape the ends together as shown.

Now you've got a road that never ends! It's also called a moebius strip (say: Moe-Bee-Us). Try drawing a line down the middle of the road on one side, all the way around. It's the only side!

**READ MINDS WITH...**

## **PSYCHIC DICE**

While your back is turned, have a friend do this:

- Roll three dice and add up the three numbers.
- Pick up any one die and add the number on its bottom to the total.
- Roll that die again and add it to the total.

Now here's the magic:

Turn around and tell your friend the total! How did you do it? Just add up the dice you see and add seven.





WHERE SHE STOPS,  
NOBODY KNOWS...

**BUT YOU!**

Show this drawing to a friend.

While your back is turned, ask your friend to think of a number.

Tell him or her to start at number one and move that many spaces up and around the question mark. If the number is greater than 15, your friend should keep counting around the circle part of the question mark. (Go from 15 to 8 to 9 and so on.)

Then, tell your friend to move that same number of spaces going the other way around the circle.

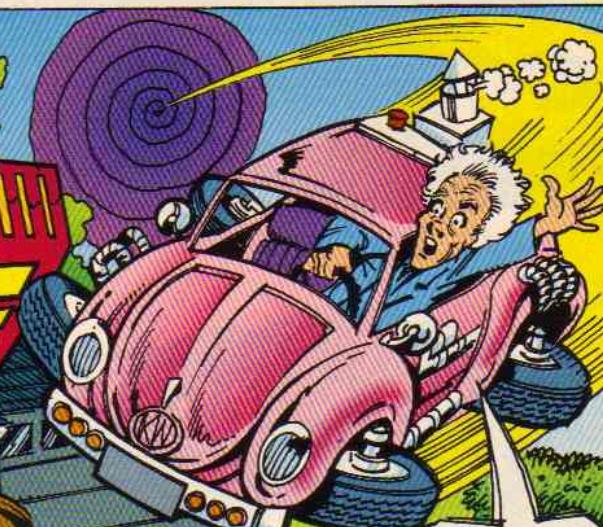
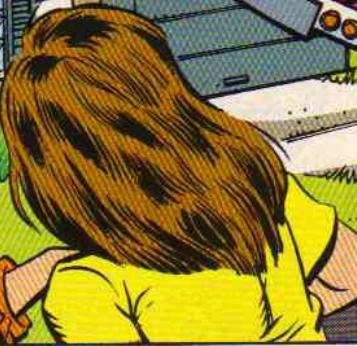
Without turning around, say: "You have stopped on number 8." It works every time!

A SQUARE ONE  
PUZZLE

# BUNK TO THE FUTURE PART II



"WE HAD JUST  
RETURNED FROM  
THE LAST SEQUEL  
WHEN..."



SMARTY!  
HENNIFER! COME  
WITH ME TO  
THE FUTURE. WE'RE  
IN TERRIBLE  
TROUBLE!

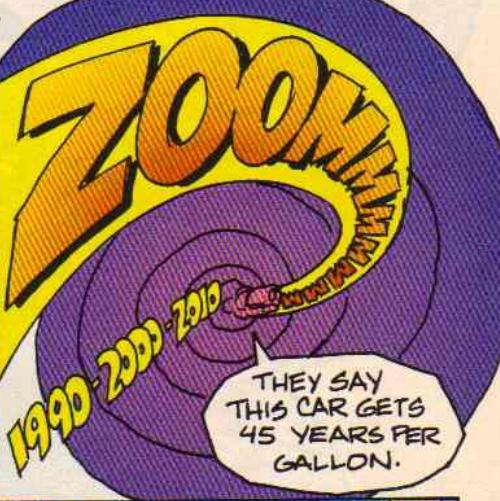
STORY: RUSSELL GINNIN  
ART: KEITH S. WILSON

I'VE GOT TO RETURN  
THIS JOKE BOOK TO  
THE FUTURE WHERE  
IT BELONGS.

IF THAT ROTTEN  
GUY BUFF TAKES IT,  
HE'LL KNOW THE  
ANSWERS TO RIDDLES  
THAT HAVEN'T BEEN  
INVENTED YET!



Heh!

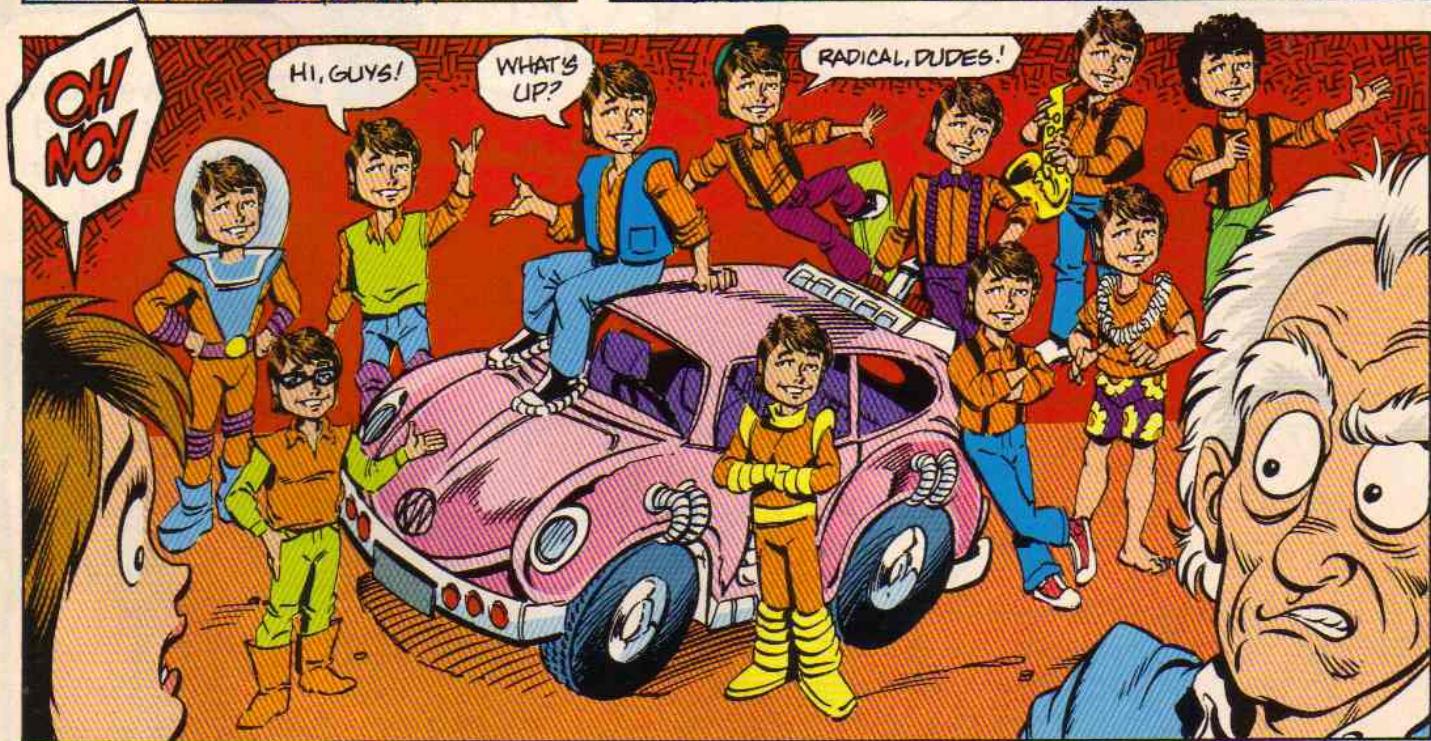


THEY SAY  
THIS CAR GETS  
45 YEARS PER  
GALLON.

THIRTY YEARS IN THE FUTURE...



SMARTY, YOU WAIT HERE WHILE  
WE TAKE THIS TO THE LIBRARY.



**HELP!** SMARTY HAS BROUGHT ALL HIS DESCENDANTS BACK FROM THE FUTURE! CAN YOU FIND THE ORIGINAL SMARTY SO THINGS WILL BE BACK TO NORMAL IN TIME FOR THE NEXT SEQUEL, *BUNK TO THE FUTURE PART 1B*? ANSWER ON THE DID IT PAGE.

WHAT'S COOKING WITH

# THE SIMPSONS?

How many cupcakes did Mr. Simpson get to eat? Solve this puzzle and find out. (Hint: Don't forget that there are five people in the Simpson family.) Answer on the Did It page.

I baked enough cupcakes so that each person in the family could have had four.

My big brother Bart ate half of the cupcakes!

I ate twice as many as my beautiful wife did.

Don't have a cow, Sis. I only had eight more than Mom did.



# HEY, LOOK US OVER

Fill Out This Poll  
and You Could Win  
A CONTACT T-Shirt!

You may have noticed that 3-2-1 CONTACT has a new look (or design) that began with our Jan/Feb 1990 issue. (The design of the magazine means what the magazine looks like—the colors, the drawings, how the words look on the page, and so on.)

We'd like to hear your opinions of our new design. After all, you are our readers and we care what you think!

We'll take all of the polls we receive and pick 20 out of a box without looking. The 20 we pick will get CONTACT T-shirts.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

Street

City

State

Zip

TELEPHONE ( ) \_\_\_\_\_

AGE \_\_\_\_ BOY OR GIRL? \_\_\_\_\_

T-SHIRT SIZE \_\_\_\_\_

1. How long have you been getting 3-2-1 CONTACT?

This is my first issue \_\_\_\_ 2-4 months \_\_\_\_  
5-11 months \_\_\_\_ 1-2 years \_\_\_\_ More than  
2 years \_\_\_\_

2. Over the past few months, have you noticed any changes in the way CONTACT looks? Yes \_\_\_\_ No \_\_\_\_

What changes? \_\_\_\_\_

3. What do you think of the way CONTACT looks now?

I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

Why? \_\_\_\_\_

4. Please look at the cover. What do you think about the way the name 3-2-1 CONTACT looks on the cover?

I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

5. What do you think about the way the page numbers and stories are listed on the Table of Contents page? (Check as many as you like.)

I think it's easy to read and find out where things are in the magazine. \_\_\_\_\_  
I think it is a little confusing to use. \_\_\_\_\_

I like it, it looks nice. \_\_\_\_\_

I don't like it, it looks funny. \_\_\_\_\_

I never use the Table of Contents. \_\_\_\_\_

Other? \_\_\_\_\_

6. Please take a look at TNT: Newsblasts on pages 2-3. What do you think of the way the words "TNT Newsblasts" look?

I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

7. Please take a look at Factoids on pages 4-5. What do you think about the way "Factoids" is written—and the way the triangle behind it looks?

I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

(Continued on page 34)

(Continued from page 33)

8. What do you think about the globe and the words "Any Questions?" on pages 6-7?  
I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

9. What do you think about having the first word of each question in "Any Questions?" in a red box instead of looking like the rest of the sentence? (Check as many as you like.)  
I think it is easy to read. \_\_\_\_  
I think it is a little confusing to read. \_\_\_\_  
I like it, it looks nice. \_\_\_\_ I don't like it, it looks funny. \_\_\_\_

Other? \_\_\_\_\_

10. What do you think of the black squares across the top of the Square One section, starting on page 28?  
I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

11. How do you like the way the comic "BUNK TO THE FUTURE" on pages 30-31 looks?  
I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

Why? \_\_\_\_\_

12. How do you like the way the words "The Slipped Disk Show" are written? (Page 35)  
I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

13. What do you think about having the pictures in "comic book style" for the Bloodhound Gang? (Pages 25-27)  
I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

14. What do you think of the squiggly lines that separate the columns of words in the Bloodhound Gang? (Check as many as you like.)  
I think it helps make it easier to read. \_\_\_\_

I think it makes it a little confusing to read. \_\_\_\_

I like it, it looks nice. \_\_\_\_

I don't like it, it looks funny. \_\_\_\_

Other? \_\_\_\_\_

15. Please take a look at "Basic Training" on pages 36-37. What do you think of the art on these pages?  
I love it \_\_\_\_ I like it \_\_\_\_ I don't like it  
\_\_\_\_ I hate it \_\_\_\_

16. Please look through the entire issue of CONTACT. Pick your three *most* favorite pages from the magazine.  
Page \_\_\_\_ Page \_\_\_\_ Page \_\_\_\_

Why did you pick them? \_\_\_\_\_

17. Now please pick your three *least* favorite pages from the magazine.  
Page \_\_\_\_ Page \_\_\_\_ Page \_\_\_\_

Why did you pick them? \_\_\_\_\_

18. We would like you to choose one word to describe how CONTACT looks. Please finish the following sentence:

I think 3-2-1 CONTACT looks \_\_\_\_\_.

THANKS FOR TAKING THE TIME TO FILL OUT THIS POLL.

SEND IT TO:

Design Poll  
3-2-1 CONTACT Magazine  
P.O. Box 40  
Vernon, NJ 07462

# THE SLIPPED DISK SHOW

**G**reetings, gang! This is your old pal, Slipped Disk, the floppy disk jockey, coming at you with another great Slipped Disk Show. A lot of you have written in asking why, since this is a computer advice show, we don't have a computer answer the questions. Well, a computer used to answer your questions, but it quit. I think it didn't like sharing a dressing room with my assistant, Floppy (who doubles as my dog).

But any human with a brain can answer your questions. And speaking of brains, it'll take some to answer this first letter, which comes from **Stephanie Hodapp**, 11, of Holstein, Iowa. Stephanie wants to know:

**"I can change computer games that I copy from Basic Training. Why can't I change the computer games that I buy in the store?"**

Stephanie, Floppy says that before you can change a computer game it has to really want to change. Now here's what I say:

The programs that you copy out

of Basic Training or some other book or magazine are written in BASIC. You can write programs in BASIC because your computer comes with built-in BASIC software.

BASIC is a very simple computer language that was invented to help people learn programming. It is easy to learn and to use. But there are limits to what BASIC can do. For example, it is very slow. This makes it hard to program great games in BASIC,

special software to allow you to do it. Most computer-users stick to BASIC or other easier-to-use languages.

I hope everyone followed my answer (in your mental hiking shoes). And speaking of everyone, I bet everyone wants to know the answer to the next question, which comes from **Aaron Hurst**, 8, of Lebanon, Pennsylvania. Aaron asks:

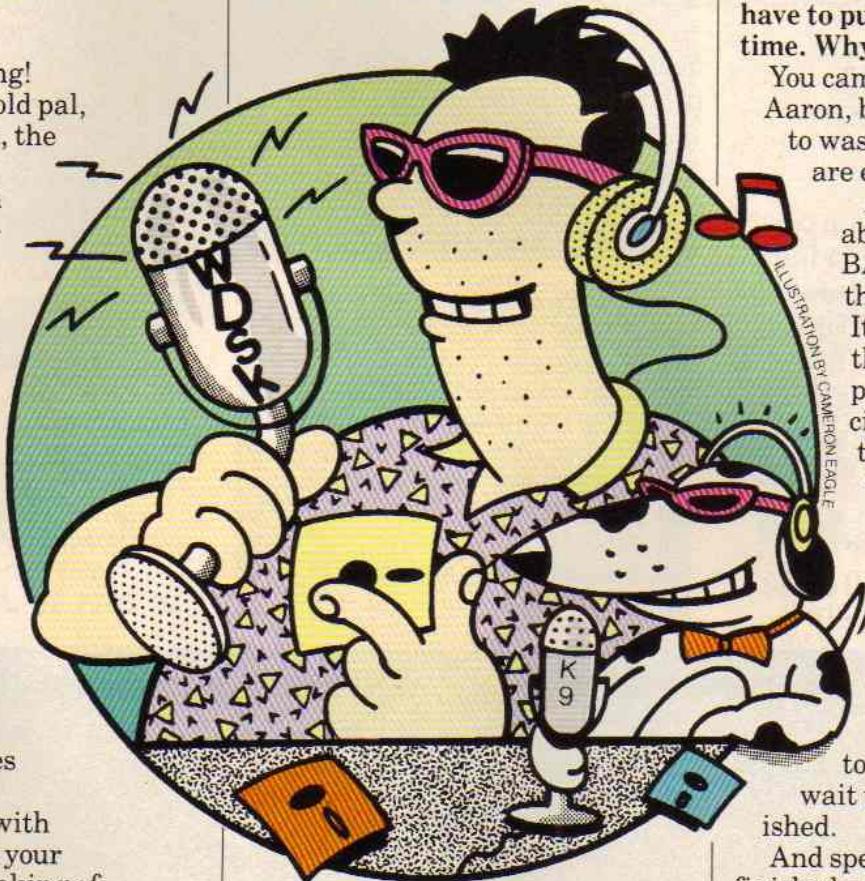
**"When I program sound commands on my computer, I have to put in loops that waste time. Why?"**

You came to the right place, Aaron, because when it comes to wasting time, Floppy and I are experts.

Aaron, you're talking about FOR NEXT loops in BASIC that don't do anything except use up time. It's a programming trick that makes the computer program "go around in circles" for a period of time before it goes on to the next instruction.

Programmers use these delay loops in lots of situations. In the case of sound commands, the delay loop doesn't have any effect on the sound itself. It is used to make the computer wait until the sound is finished.

And speaking of finished, we're finished with another show. But Floppy and I will be back next month. Remember, if you have any computer questions, send them to us at:



because nobody wants to sit around waiting for the action to continue while playing "Galactoid Cheese Creatures From The Awkward Zone."

The games that you buy in the store are written in other programming languages, usually one called "assembly language." Assembly language is much harder to learn and to use than BASIC. You could write programs in assembly language on your computer, but you'd have to buy

THE SLIPPED DISK SHOW  
3-2-1 CONTACT  
1 LINCOLN PLAZA  
NEW YORK, N.Y. 10023

# BASIC TRAINING

## I LOVE A PIANO

For Commodore 64 Computers

**H**ere's a program that turns your C64 into an electric piano. Once you type it in and run it, you can play a tune on the middle row of keys. And that's just the beginning. Hit the space bar and the tone of the notes changes.

Altogether, this program lets you sing along with your Commodore in four different

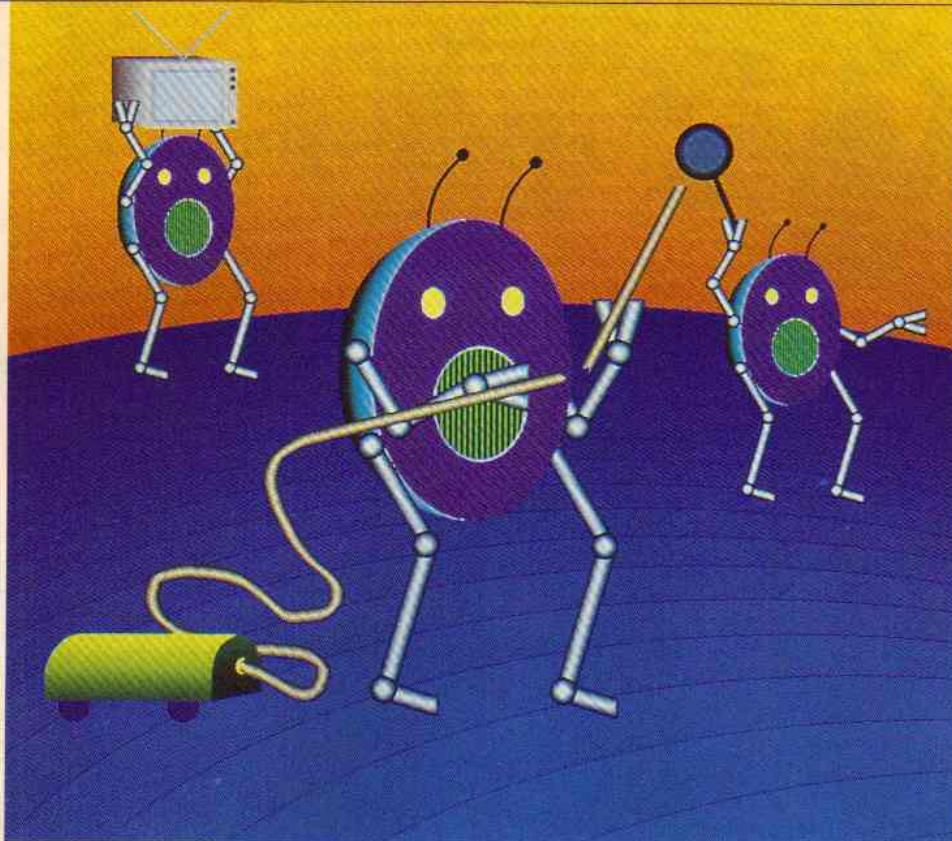
modes. About the only thing this program doesn't do is help you sing on key.

NOTE: When you see the symbol ‡, hold down the SHIFT key and press CLR.

```
5 W = 16
10 S = 54272
20 FOR I = 0 TO 30
25 POKE S + I,0:NEXT
30 POKE S + 5,9
35 POKE S + 6,0
40 POKE S + 24,15
45 POKE 54275,8
50 DIM HI(11),LO(11),KEYSS(11)
60 FOR I = 1 TO 11
```

```
65 READ HI(I):NEXT
70 FOR I = 1 TO 11
75 READ LO(I):NEXT
80 FOR I = 1 TO 11
85 READ KEYSS(I):NEXT
90 GOTO 150
100 GET A$
105 IF A$ = " " THEN 100
110 FOR I = 1 TO 11
120 IF A$ = KEYSS(I) THEN 200
130 NEXT
140 IF A$ = " " THEN W = 2*W
145 IF W > 128 THEN W = 16
150 V = W/16
155 PRINT "#"
160 IF V = 1 THEN PRINT
" TRIANGLE WAVE"
165 IF V = 2 THEN PRINT
" SAWTOOTH WAVE"
170 IF V = 4 THEN PRINT
" SQUARE WAVE"
175 IF V = 8 THEN PRINT
" WHITE NOISE"
180 POKE 53280,V
190 GOTO 100
200 POKE S,LO(I)
205 POKE S + 1,HI(I)
300 POKE S + 4,W
305 POKE S + 4,W + 1
310 GOTO 100
500 DATA 8,9,10,11,12,14,15,
16,18,21,22
510 DATA 97,104,143,48,143,
24,210,195,209,31,96
520 DATA "A","S","D","F",
"G","H","J"
530 DATA "K","L","","",""
```





## ROBOTS FIGHT BACK!

For Apple II Computers

Won't it be wonderful when robots are made that will clean up your room, do your chores and make your daily life so much easier? Sounds perfect for you—but not so great for the robot. Well, our robot has a mind of its own. It may surprise you with what it will and won't do. Just type in the program, sit back, relax and let the robot do its work. But don't say we didn't warn you: This robot may send you screaming to do all those chores you never wanted to do before!

```

10 REM ROBOT
25 HOME:VTAB(5)
30 HTAB(15):PRINT "ROBOT"
35 HTAB(9):PRINT "CUSTOM
DESIGNED FOR"
40 HTAB(9):PRINT "ANYONE WHO
NEEDS HELP"
45 FOR PAUSE = 1 TO 2500:NEXT

```

```

PAUSE
50 REM CHOICES
55 HOME:VTAB(10):HTAB(5)
60 INPUT "PLEASE ENTER YOUR
NAME":N$
65 HOME:VTAB(10)
70 PRINT "IT'S NICE TO MEET
YOU":N$
75 PRINT "I AM YOUR OBEDIENT
SERVANT"
80 PRINT
85 PRINT "WHAT WOULD YOU
LIKE ME TO DO?"
90 HTAB(5):PRINT "(C)LEAN THE
HOUSE?"
95 HTAB(5):PRINT "(M)AKE YOUR
BED?"
100 HTAB(5):PRINT "(W)ASH THE
DISHES?"
105 HTAB(5):PRINT "(D)O YOUR
HOMEWORK?"
110 HTAB(5):PRINT "(Q)UIT?"
115 PRINT
120 INPUT "ENTER THE LETTER
OF YOUR CHOICE":C$
125 IF C$ = "C" THEN GOSUB 1000
130 IF C$ = "M" THEN GOSUB 1500
135 IF C$ = "W" THEN GOSUB 2000
140 IF C$ = "D" THEN GOSUB 2500
145 IF C$ = "Q" THEN GOTO 200
150 PRINT
155 PRINT "MAKE ANOTHER
CHOICE."
160 GOTO 85

```

```

200 HOME:HTAB(4):VTAB(10)
205 PRINT "GREAT, I CAN USE A
DAY OFF!"
210 END
1000 REM CLEAN HOUSE
1010 HOME:VTAB(10)
1020 PRINT "ARE YOU NUTS? I HATE
CLEANING!"
1030 FOR PAUSE = 1 TO 2500:NEXT
PAUSE
1040 RETURN
1500 REM MAKE BED
1510 HOME:VTAB(10)
1520 PRINT "WHY SHOULD I? YOU
SLEPT IN IT!"
1530 FOR PAUSE = 1 TO 2500:NEXT
PAUSE
1540 RETURN
2000 REM WASH DISHES
2010 HOME:VTAB(10)
2020 PRINT "AND GET DISHPAN
HANDS? NO WAY!"
2030 FOR PAUSE = 1 TO 2500:NEXT
PAUSE
2040 RETURN
2500 REM DO HOMEWORK
2510 HOME:VTAB(10)
2520 PRINT "I'D RATHER PLAY A
VIDEO GAME."
2530 FOR PAUSE = 1 TO 2500:NEXT
PAUSE
2540 RETURN

```

## SEND US YOUR PROGRAMS

If you've written a program you'd like us to print, send it in. If we like it, we'll print it and send you \$25. Include a note telling us your name, address, age, T-shirt size and type of computer.

All programs must be your own original work. We cannot return programs. Please do not send discs.

Send your programs to:

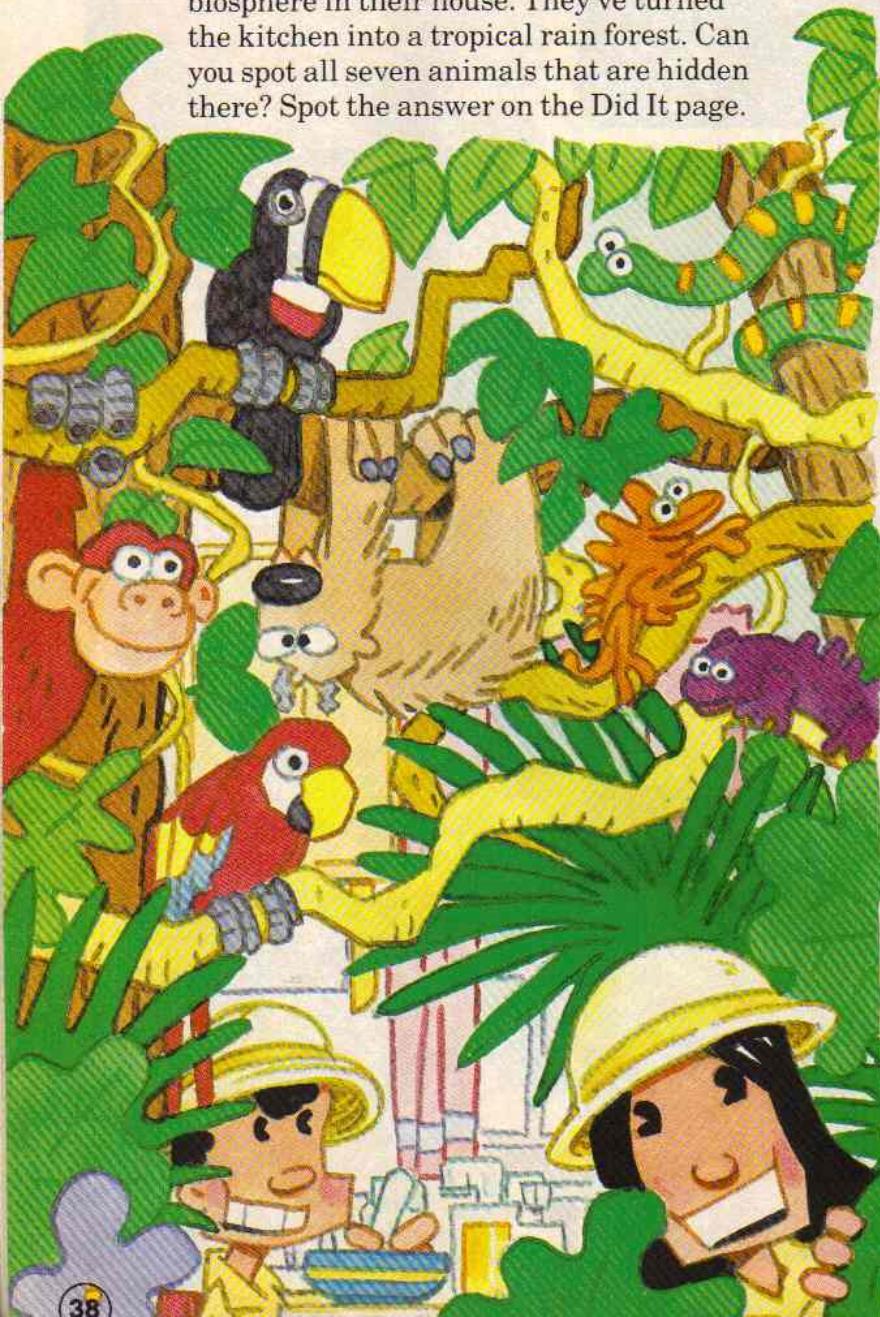


# EXTRA!

by Russell Ginn

## BIOSPHERE III

Carlos and Desireé have built a biosphere in their house. They've turned the kitchen into a tropical rain forest. Can you spot all seven animals that are hidden there? Spot the answer on the Did It page.



## PREHISTORIC ANIMAL SEARCH

The dinosaurs are extinct. That's that. But if you study these dino facts carefully, you'll discover the names of seven animals that are alive today.

These animals are hidden in the sentences below: Goat, mouse, camel, panda, toad, bear and lion. We did the first one to get you started.

Search for the answers on the Did It page.

YOU WOULD LOOK TINY, STANDING NEXT TO A **D**PLODONCHUS. IT WAS ALMOST 80 FEET LONG.

TRICERATOPS HAD A BONY SHIELD WITH TWO HORNS ON TOP AND A THIRD HORN ABOVE HIS NOSE.

145,000,000 YEARS AGO, ATLANTOSAURUS COULD BE FOUND IN NORTH AMERICA.

RICHARD OWEN WAS A FAMOUS ENGLISH ARCHEOLOGIST. HE INVENTED THE TERM "DINOSAUR."

ABOUT 65 MILLION YEARS AGO, THE DINOSAURS BECAME EXTINCT.

A COLLISION BETWEEN EARTH AND A GIANT METEOR COULD BE A REASON WHY THE DINOSAURS DIED OUT.

ANOTHER THEORY IS THAT EARTH'S CLIMATE CHANGED AND BECAME LESS SUITABLE FOR THE DINOSAURS.





### KITE CALAMITY

Oh no! Everyone's kites are tangled up. It could take days to straighten out this mess! Can you help by finding out which kite goes with which pilot?

Sail to the Did It page for the answer.

### JUNE 17 IS FATHER'S DAY

For the past 10 years, Sheldon's kids have given him a tie for a Father's Day present. Can you guess which one is his very favorite tie?

Read the clues below. Then study the different ties. The one that fits all three clues is Sheldon's favorite.

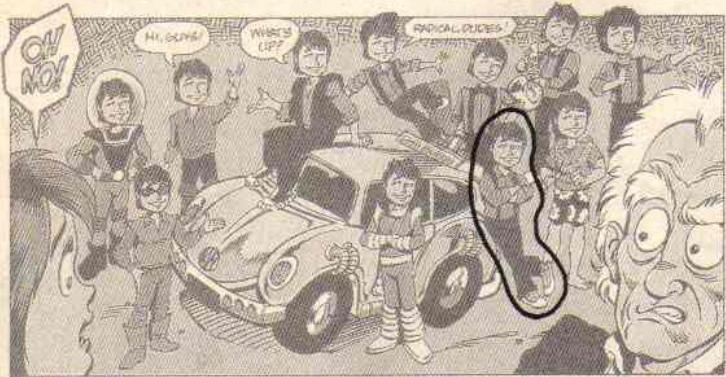
The answer is tied to the Did It page.

- The tie doesn't have any stars on it.
- It's not a bowtie.
- It has blue circles.



# Did it

BUNK TO THE FUTURE,  
PART 17



## THE SIMPSONS

He ate four cupcakes.

## PREHISTORIC ANIMAL SEARCH

YOU WOULD LOOK TINY STANDING NEXT TO A PLODDOCHUS. IT WAS ALMOST 80 FEET LONG.

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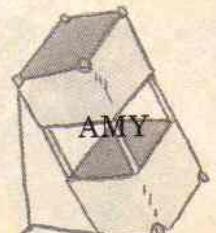
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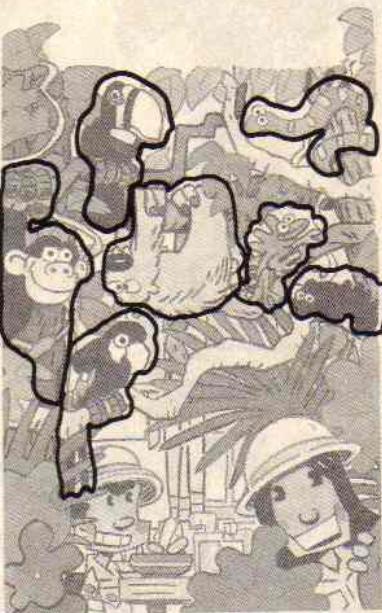
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## KITE CALAMITY



JUNE 17 IS  
BIOSPHERE III FATHER'S DAY



## NEXT MONTH

Here's what's coming in the July/August issue of 3-2-1 CONTACT:

## THRILLS AND CHILLS

Why do many people like to scream, shout and freak out on scary rides and while watching horror movies? CONTACT takes a look at the fearsome reasons.

## BATS ABOUT BATS

Meet a scientist who goes batty over bats. For a different look at these creatures and how they help humans, check out this feature.

## ROLLING ALONG

A hot, new sport is catching on from coast to coast. It's in-line skating and it's a new twist on an old sport.

## Plus

### THE BLOODHOUND GANG

### FACTOIDS, ANY QUESTIONS?

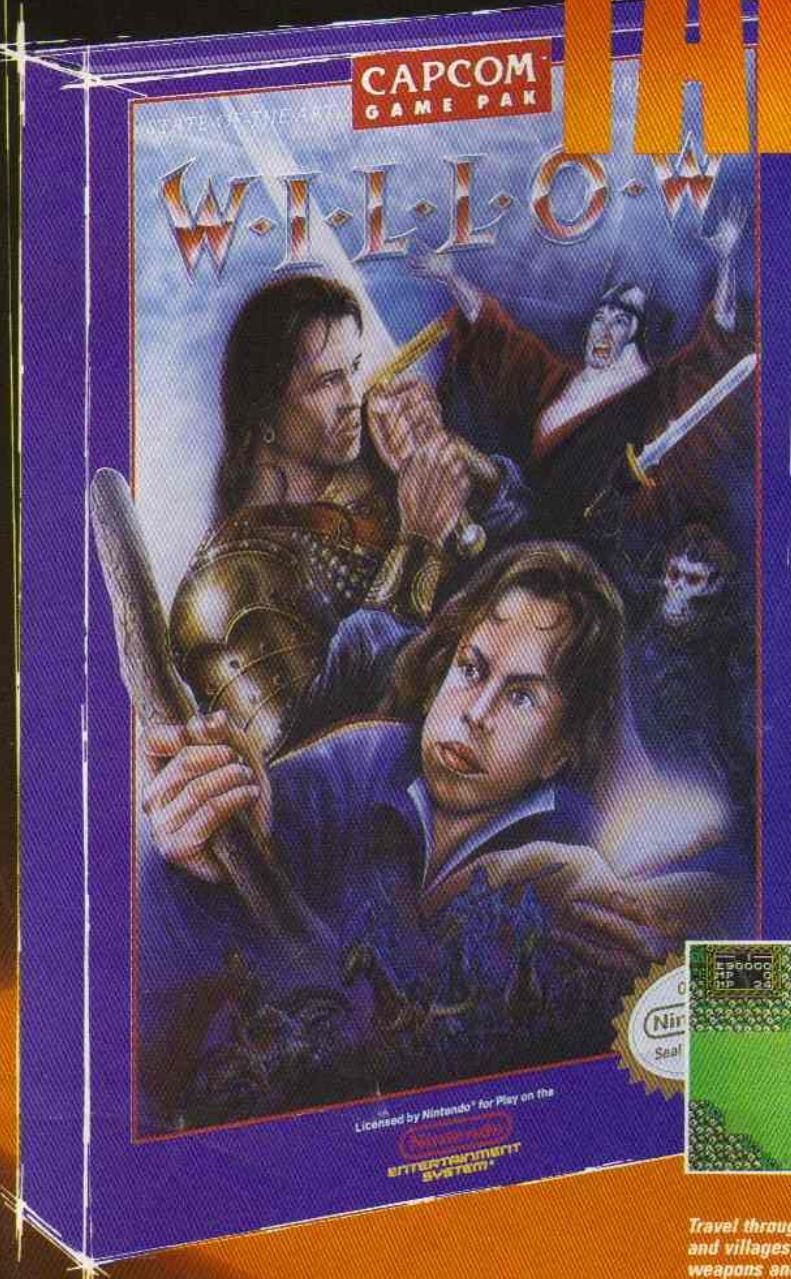
### AND MUCH, MUCH MORE!

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PREPARE FOR A

# WICKED FANTASY



Travel back to a time of sorcery and magic when the evil Queen Balmorda ruled the land under a reign of terror.

According to legend, a baby has been born who will destroy the heartless ruler. But the Queen vows she'll slay the child first!

As Willow, the child's chosen protector, you must face the deadly challenge of mysterious forests and villages while battling the Queen's Nockmaar army. In the meantime, your fate depends on collecting an arsenal of swords, shields and magic for the ultimate confrontation with the Queen!

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Travel through mysterious forests and villages; accumulating weapons and magic.



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